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Identifying Effective Psychotherapeutic Interventions and Preferences in Emotional Care: Reducing Psychological Distress and Promoting Emotional Health in Women who have Experienced Perinatal Loss

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Identifying Effective Psychotherapeutic Interventions and Preferences in Emotional Care: Reducing Psychological Distress and Promoting Emotional Health in Women who have Experienced Perinatal Loss

by

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A THESIS

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Abstract

Perinatal loss is a challenging experience because of the unexpected nature through which the loss of an unborn or recently born child commonly occurs. At present, evidence-based interventions to support women affected by perinatal loss are scarce. Understanding psychological distress after perinatal loss and identifying effective psychotherapeutic interventions and preferences in emotional care will likely improve emotional health for women across time. The purpose of this doctoral thesis is to provide the evidence needed to inform the development of, and improve women's access to, a universal, integrated emotional health screening, referral and intervention initiative that is responsive to the needs of women who have experienced perinatal loss.

This thesis contains a secondary data analysis (Chapter 2), a systematic review protocol (Chapter 3), a systematic review and meta-analysis (Chapter 4), and a cross-sectional descriptive survey (Chapter 5). The secondary analysis examined the trajectory patterns of depressive and anxiety symptoms following miscarriage and stillbirth from early pregnancy up to when the mother's child was 11 years old and identified early factors predictive of elevated symptom trajectory patterns. This is the first latent class analysis to identify longitudinal symptom trajectories and early factors predictive of elevated trajectories. The review and meta-analysis analysed and synthesized research evaluating the effectiveness of psychotherapeutic interventions to treat or decrease psychological distress in women after perinatal loss and outlined the content and delivery method of effective interventions. This is the first review to identify effective psychotherapeutic interventions and summarize their characteristics. The survey study explored women's perception of the barriers and facilitators in discussing their emotional health with a healthcare provider after prenatal loss and identified their preferences in

emotional care. This is the first study to identify women's influences and preferences in accessing emotional care surrounding a pandemic.

In summary, the studies within this research program provide evidence needed to develop a universal, integrated screening, referral and intervention initiative. This initiative empowers women to monitor and manage their emotional health after a perinatal loss. By engaging in discussions related to emotional health, healthcare providers facilitate women's early access to resources and improve their emotional health.

Keywords: Perinatal loss, Psychological distress, Psychotherapy, Intervention, Barriers, Preferences, Emotional care

Preface

This thesis contains one published manuscript (Chapter 3), one manuscript that is in editorial review for publication (Chapter 2), and two manuscripts that will be submitted for publication (Chapter 4, 5). The first author, E. M. Charrois, prepared these manuscripts with the guidance of her supervisor and committee members. All authors reviewed the final draft of their respective manuscripts and offered their intellectual expertise. Copyright permissions for each manuscript can be found in Appendix A.

- Chapter 2 is in editorial review as E. M. Charrois, K. M. Mughal, M. Arshad, A. Wajid, K. S. Bright, R. Giallo and D. Kingston, "Patterns and Predictors of Depressive and Anxiety Symptoms in Mothers Affected by Previous Prenatal Loss in the ALSPAC Birth Cohort". *Journal of Affective Disorders.*
- Chapter 3 has been published as E. M. Charrois, K. S. Bright, A. Wajid, M. K. Mughal, K. A. Hayden and D. Kingston, "Effectiveness of Psychotherapeutic Interventions on Psychological Distress in Women who have Experienced Perinatal Loss: A Systematic Review Protocol. *Systematic Reviews*, *9*(1), 125. DOI: 10.1186/s13643-020-01387-6.
- Chapter 4 will be submitted for publication as E. M. Charrois, K. S. Bright, K. A. Hayden, R. Giallo, G. Dimitropoulos and D. Kingston, "Psychotherapeutic Interventions to Decrease Psychological Distress in Women after Perinatal Loss: A Systematic Review and Meta-Analysis". *Systematic Reviews.*
- Chapter 5 will be submitted for publication as E. M. Charrois, R. Giallo, G. Dimitropoulos and D. Kingston, "Women's Perception of the Barriers and Facilitators related to Discussing their Emotional Health after Prenatal Loss and their Preferences in

Emotional Care: A Cross-Sectional Descriptive Survey Study". *Journal of Affective Disorders.*

The Calgary Conjoint Health Ethics Board approved the online descriptive survey study presented in this thesis (REB19-1990).

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I am ever grateful to my supervisory committee members, Dr. Rebecca Giallo and Dr. Gina Dimitropoulos. Rebecca and Gina, thank you for showing an unwavering interest in my progress throughout my PhD experience. I deeply appreciate you both in sharing your expertise to enhance the work undertaken within. Thank you for diligently reviewing and providing feedback on manuscripts, engaging in my candidacy process, interpreting reviewer's comments, and offering kind recommendations and support. Thank you for sharing your invaluable guidance and providing unparalleled mentorship. I could not have come this far without you.

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I wish to thank all the women who participated in the (a) research studies that comprised my systematic review and meta-analysis; (b) Avon Longitudinal Study of Parents and Children (ALSPAC) that contributed to my secondary data analysis; (c) online questionnaire for my cross-sectional descriptive survey study. I am very thankful to these women for sharing their thoughts and experiences surrounding perinatal loss. Please know that the part of yourself that you have shared in order to make the studies within this research program possible will be passed forward

to help women just like you, in the future. My deep respect for your experience and my humble appreciation for everything you have contributed.

I am grateful for the financial support I received through the Eyes High Doctoral Recruitment Scholarship funded by the University of Calgary and financial supplementation from the Kingston Research Team Chair. Thank you for acknowledging the importance of research related to perinatal loss and supporting my pursuit in conducting relevant studies within my research program. A big thank you to my fellow graduate, doctoral and post-doctoral colleagues, members of the Kingston team, biological and soul family, and the community within the Faculty of Nursing. You have guided, encouraged and motivated me throughout my doctoral studies. Thank you for your unrelenting patience, expedient feedback, unique generosity, and unyielding support over the past four years. Your contributions to my growth will be affectionately remembered.

Last but not least, thank you to all examination panel members who have participated in my candidacy oral exam and doctoral oral defence. Your commitment to clinical practice and research within social and healthcare environments is exceptional and your participation at the turning points of my PhD career is very much appreciated.

I am inspired to emulate the legacy of excellence that everyone, who contributed to my growth, has established within their lifelong professional careers. Resounding appreciation for you all.

Because of your contribution,

I have PHinisheD!

Dedication

To the women who lost a pregnancy or neonate and are grieving,

To the women who feel alone, misunderstood, or invalidated after their loss,

To the women who are expecting and anxious when they feel there should be happiness,

To the women who want to access emotional support but are worried what others would think,

To the partners, families and friends who love and support these women,

To the health providers who want to do the best for these women,

This work was completed in your honour,

and is for you.

~Elyse Mireille Charrois~

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List of Abbreviations

A	
AIC	Akaike's Information Criteria
ALSPAC	Avon Longitudinal Study of Parents and Children
AOR	Adjusted Odds Ratio
APA	American Psychiatric Association
AUC	Area Under the Curve
AUS	Australia
B	
BAI	Beck Anxiety Inventory
BC	Bereavement Counselling
BCP	Bereavement Counselling Program
BDI	Beck Depression Inventory
BDI-II	Beck Depression Inventory (2nd ed.)
BIC	Bayesian Information Criterion
BP	Blood Pressure
Brief-STAI	Brief State-Trait Anxiety Inventory
C	
CAPWHN	Canadian Association of Perinatal and Women's Health Nurses
CAGE-AID	Questionnaire or Drug and Alcohol Addiction Screening
CBT	Cognitive Behavioral Therapy
CC	Combined Caring
CCEI	Crown-Crisp Experiential Index
CCRT	Cochrane Central Register of Controlled Trials
CENTRAL	Cochrane Central Register of Controlled Trials
CES-D	Center for Epidemiological Studies-Depression Scale
CG	Complicated Grief
CHREB	Conjoint Health Research Ethics Board
CI	Confidence Interval
CIHR	Canadian Institutes of Health Research
CMHP	Couple's Miscarriage Healing Project
CRD	York's Centre for Reviews and Dissemination
D	
DAS	Dyadic Adjustment Scale
DASS-21	Depression Anxiety Stress Scale (21 Questions)
DI	Deferred Intervention
DIS	Diagnostic Interview Scale
d/o	Disorder
DSM-IV/V	Diagnostic and Statistical Manual of Mental Disorder, fourth edition/fifth edition

	E-F
EMDR	Eye Movement Desensitization and Reprocessing
EPDS	Edinburgh Postnatal Depression Scale
EPHPP	Effective Public Health Practice Project Quality Assessment Tool
ES	Effect Size
FHCP	Fordyce Happiness Counselling Program
	G
GAF	Global Assessment of Functioning
GC	Grief Counselling
GEI	Grief Experience Inventory
GHQ	General Health Questionnaire
GIQ	Grief Index Questionnaire
GRADE	Grading of Recommendations, Assessment, Development and Evaluations
GRE	Grief-Related Emotions subscale of MGI
	H
HADS	Hospital Anxiety and Depression Scale
HAM-A	Hamilton Rating Scale for Anxiety
HAM-D	Hamilton Rating Scale for Depression
HRDR	Health Research Data Repository
HRSD	Hamilton Rating Scale for Depression (also known as HAM-D)
	I-J
ICG-R	Inventory of Complicated Grief-Revised
IES	Impact of Events Scale
IES-R	Impact of Events Scale-Revised
II	Immediate Intervention
Immed.	Immediately
IPC	Interpersonal Counselling
IPT	Interpersonal Psychotherapy
ISA	International Stillbirth Alliance
ITT	Intention to Treat
	K-L
k	Number of Studies
L^2	Likelihood Ratio Statistic
LCA	Latent Class Analysis
LEEDS	Self-Assessment of Anxiety and Depression
	M
MC	Medical Consult
MCAR	Missing Completely at Random
MDD	Major Depressive Disorder
MGI	Miscarriage Grief Inventory
MINI	MINI-International Neuropsychiatric Interview

MMM	Meaning of Miscarriage Model
MS	Mourning Scale
MSc	Master of Science
	N-O
NA	Not Applicable
NC	Nurse Caring
NHMRC	National Health and Medical Research Council
NI	Not Indicated
NICU	Neonatal Intensive Care Unit
OR	Odds Ratio
	P-Q
p	p-value
PAIL	Pregnancy and Infant Loss Network
PALS	Pregnancy After Loss Support
PBIP	Perinatal Bereavement Intervention Program
PC	Psychology Consult
PD	Psychological Debriefing
PE	Psychoeducation
PrAS	Pregnancy-Related Anxiety Scale
PB	Post Baseline
PCBD	Persistent, Complex Bereavement Disorder
PG	Pure Grief subscale of MGI
PGS	Perinatal Grief Scale
PHQ	Patient Health Questionnaire
PHQ-9	Patient Health Questionnaire-Revised
PICOSS	Participants, Interventions, Comparators, Outcomes, Study designs, Setting
PL	Perinatal Loss
PLIDA	Pregnancy Loss and Infant Death Alliance
POQ	Pregnancy Outcome Questionnaire
POV	Point of View
PPD	Postpartum Depression
PPL	Post Perinatal Loss
PPQ	Prenatal Post-Traumatic Stress Questionnaire
PRAQ	Pregnancy Related Anxiety Questionnaire
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta- Analyses
PRISMA-P	Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols
PROSPERO	International Prospective Register of Systematic Reviews
PT	Post Treatment
PTS	Post-Traumatic Stress
PTSD	Post-Traumatic Stress Disorder
	R

RCT	Randomized Controlled Trial
Ref.	Reference Category
RoB2	Cochrane Risk of Bias assessment for RCTs
ROBINS-1	Risk of Bias in Non-Randomized Studies of Interventions
	S
SAS	Social Adjustment Scale
SC	Self Caring
SCCP	Swanson Care Counselling Program
SCID	Structured Clinical Interview for DSM
SCID-I	Structured Clinical Interview for DSM-I
SCID-IV	Structured Clinical Interview for DSM-IV
SCP	Supportive Counselling Program
SCT	Swanson Caring Theory
SD	Standard Deviation
STAI	State-Trait Anxiety Inventory
SW	Social Worker
	T
TAU	Treatment as Usual
TOP	Termination of Pregnancy
TOPFA	Termination of Pregnancy for Fetal Anomalies
TRIG	Texas Revised Inventory of Grief
	U-V
UK	United Kingdom
USA	United States of America
	W-X
WHO	World Health Organization
Wks	Weeks
WLC	Waitlist Control
WMD	Weighted Mean Difference
	Y-Z
YOA	Years of Age

Epigraph

You will always be my favorite,

“what if…?”

~author unknown~

Chapter 1 Introduction

Philosophy, Research, and Nursing Knowledge

Philosophy, a term referring to the body of knowledge, originated from the Greek word 'philosophia' meaning the 'love of knowledge' and the 'pursuit of wisdom' (Harper, 2019). Philosophy aspires that knowledge result from critical evaluation of one's foundation for their convictions, prejudices and beliefs to provide unity and system to a body of knowledge (Russell, 1969). Nursing research is a systematic process of inquiry that produces feasible evidence on issues in nursing that contribute to nursing knowledge (Polit & Beck, 2017). Understanding the underlying philosophical framework provides guidance for researchers in critically appraising issues in nursing and determining the appropriate direction for research and knowledge development (Rodgers, 2005). The history, nature and assumptions of a specific philosophical framework influences the research question, and the study design and methods (Ford-Gilboe et al., 1995; Geanellos, 1997; Polifroni & Welch, 1997). Historically, the body of knowledge in nursing and mental health have been influenced by research based on philosophical frameworks including positivism, postpositivism, interpretivism, constructivism, critical social theory and pragmatism (Doucet et al., 2010; Routledge, 2007; Gunawan, 2016; Guba & Lincoln, 1994). Yet, articulation of the philosophical assumptions underlying nursing research has largely been neglected, it is thought, because of researchers' and academics' lack of understanding of philosophical inquiry (Pesut & Johnson, 2007). With consideration for my nursing education, experience and research program related to perinatal loss (PL), the post-positivist philosophical framework is the most suitable.

Nursing knowledge is made distinct through the development of research programs motivated to contribute to a body of knowledge that is relevant to nurses and nursing practice

(Risjord, 2010). As Reed and Lawrence (2008) surmised, “nursing knowledge refers to knowledge warranted as useful and significant to nurses and patients in understanding and facilitating human health processes”(p.243). Philosophical inquiry that is considerate of the distinctive knowledge and perspective that is held by nurses and addresses their queries and concerns relevant to their practice reflects a nursing standpoint epistemology. As such, a researcher with a nursing background will conduct research and develop knowledge that is consistent with the values at the core of nursing practice (improving patient autonomy and well-being, valorizing the nursing profession) (Risjord, 2010). My commitment as a researcher with experience in the nursing, and mental health and addiction fields is to develop knowledge that will improve women’s health care experiences and seek emancipatory transformation to benefit women who have experienced perinatal loss. In the following section, I will present my professional experience and research interests, and discuss postpositivism and how it contributes to nursing knowledge.

Professional Experience and Research Intention

My experience and interest in psychiatry, addiction, and mental health has grown throughout my nursing profession over the last two decades. As a registered nurse, I have been able to provide direct care to clients with psychiatric diagnosis from children to older adults in acute care settings and in the community, and develop and facilitate educational opportunities for employees in the addiction and mental health field. I have pursued further education focusing on substance addiction and completed therapist certification focusing on process addiction. Having the honour of gaining experience and education in this specialized area motivated me to pursue my long-standing passion for perinatal mental health and research focused on women affected by perinatal loss (PL). As such, this research program was developed and conducted to benefit these

women, their close correspondents (partner, family, friends) and the professionals who provide care.

Postpositivism

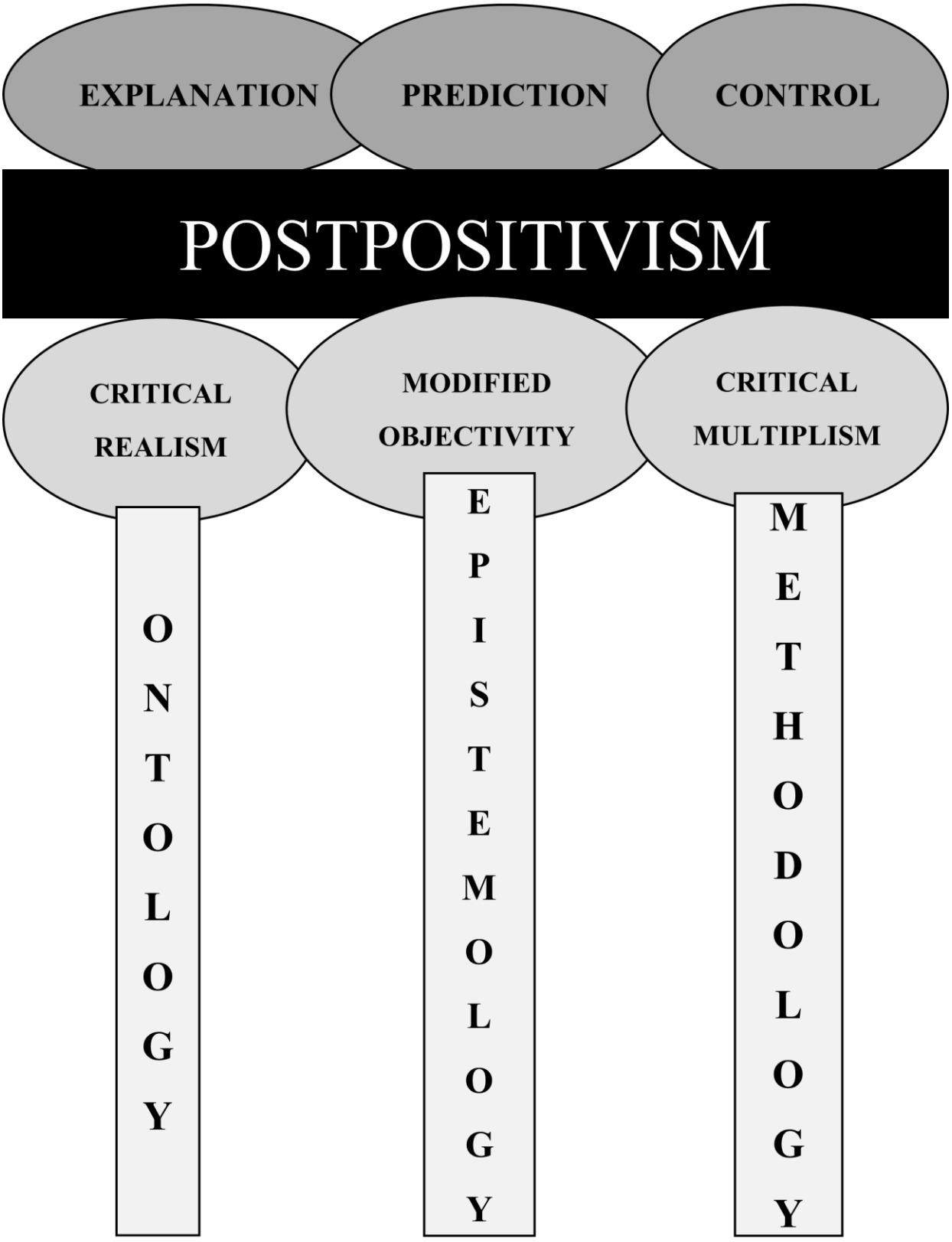
Postpositivism is being identified as that which underpins contemporary research programs, where influential work originated from Karl Popper (Popper, 1959), Jacob Bronowski (Bronowski, 1950; Bronowski, 1956), Thomas Kuhn (Kuhn, 1970), and Charles Hanson (Hanson, 1958). Postpositivism is a philosophy that germinated to transcend and upgrade positivism (Adam, 2014) which incorporates the new tenets of falsificationism, fallibilism and pluralism (Hetherington, 2000). These tenets were merged into the definition that describes the three frames of reference that provide structure to postpositivism. These frames of reference refer to ontology, epistemology and methodology (Adam, 2014). Ontology describes the form and nature of reality, epistemology defines how we come to understand reality, and methodology outlines how knowledge is attained (Guba & Lincoln, 1994).

The Philosophical Model

Postpositivism offers a foundation for understanding the prevalence and trajectories of elevated psychological distress in women affected by perinatal loss (PL) and their contributing factors, effective psychotherapeutic interventions in reducing maternal psychological distress and their characteristics, and women's engagement in emotional health screening and their preferences in emotional care. To manifest postpositivism in nursing research, models have the infrastructure to accommodate the context of a philosophy (Bender, 2018) and promote understanding of the assumptions and frames of reference that represent aspects of the philosophy (Godfrey-Smith, 2006). As such, a model has been created to improve understanding of how postpositivism philosophy underlies this research program. Each pillar in the model

(Figure 1.1) supports the ontological, epistemological and methodological frame of reference within postpositivism, which is represented by critical realism, modified objectivity and critical multiplism, respectively. Explanation, prediction and control, elements of the scientific method based on postpositivist thought, are situated on top of the postpositivism bar.

Figure 1.1: Philosophical Model of Postpositivism



The Ontology, Epistemology and Methodology

Postpositivism is distinct because of its ontological, epistemological and methodological frames of reference (Adam, 2014). Frames of reference based on postpositivism enhance the prediction of outcomes, interpretation of data and explanation of research findings. As the primary researcher of a research program focusing on perinatal mental health and perinatal loss (PL), evidence of the underlying postpositivist philosophy will be reflected in the approach used to understand truth and reality, plan and conduct each study, measure and interpret data, and explain and disseminate the findings from each study, individually and as a whole.

First, the ontological frame of reference (form and nature of reality) suggests that postpositivists believe there is a true reality however, it can never be fully known (Guba, 1990). Truth can only be understood imperfectly, and reality can only be known probabilistically (Guba). Reality is regarded as a stratified open system characterized by unobservable causal laws which interact interdependently to create observable change (Cruickshank, 2012; Bhaskar, 1979; Bhaskar, 1998). This stratified, open system has been referred to as critical realism which describes a reality that is understood to be imperfect, probabilistic and vulnerable to criticism (Guba & Lincoln, 1994). Moreover, the postpositivist researcher is aware that any explanation provided for their research will be influenced by their senses and cognitive process (Guba). With awareness of these factors and their influence it is likely then, that measurement of outcomes is inaccurate, and interpretations of findings are fallible (Guba). It is because of this understanding that postpositivist researchers make it their goal to view their research inquiries critically. Further, postpositivist researchers regard knowledge claims of reality as warranted assertions of the truth if they gain credibility by surviving wide, critical evaluation and challenge (Phillips, 1990; Popper, 1968). As a postpositivist researcher, the truths revealed within each study of this

research program will be regarded as plausible but incomplete and impermanent because of my perceptive limits and personal perspective.

The epistemological frame of reference (how we come to understand reality) suggests that postpositivists believe in modified objectivity, which values objectivity as the ideal but accepts the interplay of subjectivity (Giddings & Grant, 2007). In postpositivist research, observations are never completely objective and researcher objectivity is not attainable (Giddings & Grant). It is common for postpositivist researchers to make observations, analyze data, scrutinize findings, make inferences and contextually bind research results, through the lens of their own presuppositions, values and perspectives (Schumacher & Gortner, 1992). Moreover, all human activities consist of both inside (emic) and outside (etic) perspectives (Leininger, 1985) which are anthropological representations of subjective and objective views, respectively. Nursing research requires both emic and etic approaches as perspectives on health and the experience of health may differ from one person to another, and between researcher and participant (Risjord, 2010). Postpositivist researchers respect the value of modified objectivity and make it their goal to capture its essence when conducting their research. As a postpositivist researcher, studies within this research program that provide data based on scores from validated and reliable psychometric measurement tools will be interpreted as objective representations of subjective experience.

Using deductive reasoning, the postpositivist researcher captures [modified] objectivity by engaging in specific activities during the research process (Weiss, 1995). These activities require researchers to describe influential predispositions they bring to their study, maintain neutrality while conducting research, describe how they have critically evaluated their findings, and explain how these findings complement previous research and pre-existing knowledge

(Guba, 1990; Weiss). As a postpositivist researcher, planning and conducting each study will commence with the evaluation and articulation of my predispositions, continue by engaging neutrality and reflexivity, and conclude with a critical evaluation of the study results and a comparative examination of the evidence within this research program with findings from similar studies. Critically evaluating and the comparing the results from the studies in this research program with multiple sources will enrich the credibility of explanations and discussion of the findings.

The methodological frame of reference (how knowledge is attained) suggests that postpositivists believe in methodological pluralism, wherein the phenomena of interest are studied using multiple approaches (Letourneau & Allen, 1999). Moreover, because all measurements are considered inaccurate and interpretation of findings are regarded as fallible, using multiple sources of data to provide an explanation or critique of study findings reduces the possibility that results are distorted. Methodological pluralism, also known as critical multiplism, is an approach that offers many opportunities, including (Letourneau & Allen, p. 624):

- Multiple stakeholders to formulate research questions;
- Multi-targeted research that explores several issues within a single study;
- Multiple operationalism;
- Multi-method research;
- Complex multivariate causal models;
- Competitive testing of multiple rival hypotheses;
- Research programs based on multiple interconnected studies;
- Synthesis of multiple studies representing different contexts and measures;
- Multiple analysts examining important data sets;

- Multiple theoretical frameworks to develop research questions and interpret findings.

Postpositivist researchers believe that research evidence that contributes to nursing knowledge is strengthened by integrating several studies based in the experience of nurses and health care consumers that address problems arising in the course of nursing (Risjord, 2010). The contribution of many studies (quantitative, qualitative, mixed method), summaries of several studies (secondary data analysis, systematic review, meta-analysis, descriptive survey), or multiple sources of data (comparing study findings with findings from similar studies) increases opportunity for studies to support or explain each other which enhances appropriations of reality (truth). For example, while quantitative research offers data based on prediction and explanation, qualitative research strives to confirm and enrich quantitative data (Risjord). As a postpositivist researcher, I understand that the evidence revealed in the studies of differing designs in this research program (secondary data analysis, systematic review and meta-analysis with narrative synthesis, descriptive survey with thematic analysis) will facilitate comprehensive understanding of the overall knowledge from all studies and from each individual study. Utilizing several approaches in this way, exemplifies critical multiplism and highlights the value of postpositivism as an underlying philosophical framework to guide nursing research and knowledge development. As Risjord surmised, “nursing knowledge is a unified structure, a patchwork of research practices”(p. 212).

Background of Perinatal Loss

Perinatal loss (PL) is a devastating occurrence wherein women often experience psychological distress. Expressions of psychological distress commonly include depression, anxiety, grief, and post-traumatic stress (PTS) (Hughes & Riches, 2003; Hunter et al., 2017;

Kersting & Wagner, 2012). Between 22% and 45% of women report clinical levels of anxiety (Prettyman et al., 1993), depression (Neugebauer et al., 1992a; Neugebauer et al., 1992b; Prettyman et al.), or post-traumatic stress (PTS) (Engelhard et al., 2001) at some point after a perinatal loss. More than half of women report severe grief symptoms between six and ten weeks after miscarriage (Murphy et al., 2014). The influence of poor maternal mental health on obstetrical complications, fetal/infant attachment and child development is well-established in women after perinatal loss (Armstrong et al., 2009; Gaudet et al., 2010). If left untreated, poor mental health places significant yet preventable burden on healthcare systems and society (Heazell et al., 2016).

Perinatal Loss and Prevalence

Perinatal loss (PL) may be represented by miscarriage, stillbirth, or neonatal death. Miscarriage is the loss of a pregnancy before 20 weeks' gestation; stillbirth is death after 20 weeks' gestation with the fetus weighing over 500 grams; and neonatal death is loss of an infant within 28 days after birth (Barfield, 2011; Kersting & Wagner, 2012; Meredith et al., 2017; Wang et al., 2013). The cause of miscarriage is often unknown, of stillbirth is usually related to the health of the mother, baby, or placenta and of neonatal death is primarily related to congenital malformations, immaturity, and asphyxia (Public Health Agency of Canada, 2017).

In Canada, the prevalence of miscarriage is 20% (Kingston et al., 2012a) and higher for those who have previously lost a pregnancy (August et al., 2011), increasing to 75% for women 45 years of age and over (Robinson, 2011). One study indicated that the prevalence of miscarriage, including the documented and missed or undocumented, is closer to 30 to 40% of pregnancies each year (Michels & Tiu, 2007).

Prevalence and Patterns of Psychological Distress

Compared to the postpartum prevalence rates in a community sample with anxiety at 15-20% (Dennis, Falah-Hassani, & Shiri, 2017; Lonstein, 2007; Nakić Radoš, Tadinac, & Herman, 2018) depression at 5-25% (Woody et al., 2017), and post-traumatic stress disorder (PTSD) at 1-6% (Denis et al., 2009; Grekin & O'Hara, 2014); clinical anxiety, depression, and post-traumatic stress disorder (PTSD) are more common in women after a perinatal loss. Other studies found elevated symptoms into a subsequent pregnancy (Hunter et al.) and extending for years after the delivery of a healthy child (Blackmore et al., 2011).

Depression and Anxiety in Women After Perinatal Loss

As previously reported, levels of depression and anxiety were found to be significantly high for months following a PL when compared with controls (Beutel et al., 1995; Blackmore et al., 2011; Kulathilaka et al., 2016; Lok et al., 2010; Neugebauer et al., 1992a; Neugebauer et al., 1997; Thapar & Thapar, 1992) with the possibility of remaining elevated up to a year or more after miscarriage (Lok et al., 2010). Across several studies, the proportion of women affected by miscarriage who met the criteria for depressive disorder in the DSM-V (APA, 2013) was reported at approximately 18% (Kulathilaka et al.). Within two weeks after miscarriage, between 22% (Prettyman et al., 1993) and 36% (Neugebauer et al., 1992a, Neugebauer et al., 1992b) of women experienced clinical depression, which decreased to between 12.8% and 26% of women, six months later (Neugebauer et al., 1992a). In addition, the proportion of women who experienced clinical anxiety immediately after a miscarriage was reported at 41% (Prettyman et al.). Over time, women's reports of depression and anxiety improved (Murphy et al., 2014) and parents indicated they felt 'almost fully recovered' after two to three years from the date of a stillbirth (DeFrain et al., 1990-1991; Hughes & Riches, 2003).

Depression and Anxiety in Subsequent Pregnancy

Because between 50 to 80% of women become pregnant after experiencing PL, psychological distress in subsequent pregnancy or after the delivery of a subsequent child is significant (Mills et al., 2014). A meta-analysis with a total sample of over 35,000 pregnant women who had previously experienced miscarriage, stillbirth, neonatal death, termination of pregnancy for fetal anomaly (TOPFA), or termination of pregnancy (TOP) found that their PL had strong associations with their depression and anxiety (Hunter et al., 2017). Another meta-analysis showed that pregnancies following stillbirth or neonatal death were associated with higher anxiety and emotional vulnerability (Mills et al.). Further, a literature review disclosed that 21% of women affected by stillbirth were significantly more depressed in the third trimester of a subsequent pregnancy (O'Leary, 2004). Having felt betrayed by a lost pregnancy, another pregnancy may arouse uncomfortable emotions related to the loss and worsen psychological distress (Lewis, 1979; O'Leary). While there is a common belief that a subsequent pregnancy will ameliorate psychological distress, research suggests that subsequent pregnancy results in heightened fear related to potential recurrent PL, uncontrolled anxiety, clinical depression, hypervigilance towards the health of the fetus/infant, insomnia, nightmares, and delayed emotional engagement with the new pregnancy (Brier, 2008; Meredith et al., 2017; Mills et al.).

Depression and Anxiety After the Birth of a Subsequent Child

Studies have shown that PL is associated with psychological distress in women regardless of whether they currently have children. Women's psychometric scores for depression and anxiety symptoms were high after they delivered a subsequent healthy child and remained high up to three years after the birth (Blackmore et al., 2011). The findings of Blackmore et al.'s analysis are in contrast with the results of an earlier cohort study which found depression and

anxiety levels in women affected by stillbirth to be no different from controls after the birth of a subsequent child at six and 26 weeks postpartum (Hughes et al., 1999). However, the same cohort study identified that the group of women who became pregnant within a year of the loss continued to experience high levels of depression and anxiety at six weeks gestation and six and 12 months postpartum when compared to the group of women who waited more than a year (Hughes et al.). Previous studies also found that women affected by PL who scored high on trait anxiety psychometric scales and depression inventories at 16 weeks postpartum perceived the subsequent child as displaying more problematic behaviours (crying, eating, sleeping, establishing routines) than controls perceived in their infant (Hunfeld et al., 1996; Hunfeld et al., 1997). These findings demonstrate the influence that elevated depression, anxiety, or stress resulting from previous PL has on maternal-infant adaptation after the birth of a healthy child (Hunfeld et al., 1996; Hunfeld et al., 1997).

Grief in Women After Perinatal Loss

Research shows that prolonged poor mental health after PL is associated with complicated grief (CG) (Kersting & Wagner, 2012; Toedter et al., 2001). In addition, one's relationship to the deceased influences the severity of complicated grief (CG) for the bereaved. While there is no consensus among mental healthcare providers, the majority diagnose complicated grief (CG) when grieving is severe, persistent, and debilitating beyond one year from the date of death (Mayo Foundation for Medical Education and Research, 2021). A population-based study found that individuals who lost a child showed the highest prevalence of complicated grief (CG) (23%) on the German version of the Inventory of Complicated Grief – Revised (ICG-R) compared to those who lost a parent or sibling (Kersting et al., 2011a). Another study showed that 54% of individuals were scoring high levels of grief on the Perinatal Grief

Scale (PGS) six to ten weeks after experiencing a miscarriage (< 28 weeks) (Murphy et al., 2014), which persisted up to six months after the loss (Broen et al., 2005).

Grief is considered prolonged if there is no improvement in emotional equilibrium after six months and when areas of function continue to be impaired (Hughes & Riches, 2003). Longitudinal studies that focused on the normal grieving process following a PL, have documented reductions in grief over the course of two years after the perinatal loss (Kersting & Wagner, 2012; Janssen et al., 1997; Lasker & Toedter, 1991). Interestingly, another study found that parent's grief scores were high initially after PL and improved within the year yet diverged by the two-year time point into two distinct groups: one representing continued improvement (41%) and the other representing little improvement (59%) (Kersting & Wagner). The parents that showed little improvement with their grief score after two years, according to the Diagnostic & Statistical Manual of Mental Disorders (5th ed.) (DSM-V), meet criteria to be diagnosed with persistent, complex bereavement disorder (PCBD) (APA, 2013). The Diagnostic and Statistical Manual of Mental Disorders (5th ed) (DSM-V) indicates that at least one required criterion be clinically significant on more days than not for at least 12 months after the loss that causes impairment in social, occupational, or other important areas of function (2013). The disruption associated with bereavement can trigger not only persistent, complex bereavement disorder (PCBD), but also depression and post-traumatic stress disorder (PTSD) (Jordan & Litz, 2014). Undiagnosed persistent, complex bereavement disorder (PCBD) after PL has been identified as a predictor of disorganized attachment between parents and their subsequent children (Main & Hesse, 1990, Main & Hesse, 1992; O'Leary, 2004). If persistent, complex bereavement disorder (PCBD) remains untreated, high blood pressure (BP), cardiac difficulties, substance misuse and suicide become greater risks (Parks & Prigerson, 2010).

Traumatic circumstances related to death compounds depressive, anxiety, and post-traumatic stress (PTS) and exacerbates the risk of complicated grief (CG) (Auster et al., 2008). When considering gender, being female brings a higher risk for developing CG than being male (Kersting et al., 2011a). Moreover, women affected by PL showed similar scores on the Impact of Events Scale (IES) to individuals affected by extraordinary traumatic life events (sexual abuse, violence and assault, or natural disaster) (Sundin & Horowitz, 2002). In fact, women who had experienced either miscarriage or stillbirth were assessed to have post-traumatic stress (PTS) symptoms ranging from subclinical to clinical on average (Kersting et al., 2011a). The evidence showing associations between PL, gender, PTS, and CG indicate that PL should be acknowledged as a traumatic event that places affected women at increased risk for developing persistent, complex bereavement disorder (PCBD) and post-traumatic stress disorder (PTSD).

Post-Traumatic Stress in Women After Perinatal Loss

The largest and most current epidemiological study to evaluate the psychological impact of stillbirth and neonatal death (< 28 days) found that mothers were at seven times higher risk of experiencing PTS symptoms nine months postpartum than non-bereaved parents (Gold et al., 2016). In this study, there was no difference between mothers bereaved from stillbirth and mothers bereaved from neonatal death with severity of PTS symptoms (Gold et al., 2016). Between 25% and 45% of women experienced clinical post-traumatic stress disorder (PTSD) one to three months after pregnancy loss (Engelhard et al., 2001). About 20% of women experienced post-traumatic stress disorder (PTSD) in a pregnancy subsequent to stillbirth, compared with 0.4 to 4.6% in the general population (Turton et al., 2001). Yet, pregnant women bereaved from a previous PL (eg., miscarriage, stillbirth, neonatal death) were less likely to experience clinically significant PTS symptoms than those similarly bereaved and not pregnant (27% versus 41%)

(Gold et al., 2016). The lifetime risk for PTSD after PL has been estimated to be 29% (Turton et al.).

Factors Contributing to Psychological Distress After Perinatal Loss

Perinatal loss (PL) is distinct from the death of an independent individual in that it is an event that parents often do not anticipate, prepare for, or gain closure with prior to its occurrence as they may have within other contexts of bereavement (Kersting & Wagner, 2012). It is losing a loved, yet unintroduced, family member in which parents had envisioned lifelong potential. Women who experience miscarriage find an immediate need to adjust to a new state of being; "transitioning from joy, hope and anticipation to sudden bewilderment, surrender and immense sadness" (C. C., personal communication, November 15, 2017). Perinatal loss (PL) defies our understanding of pregnancy being associated with life by transforming it into an association with death. This defiance to understanding has the potential to compound maternal psychological distress in several ways. Because PL is poorly understood, there is limited (a) societal acknowledgement of its negative impact on women; (b) understanding in close correspondents of being an effective support; (c) desire to seek resources for emotional health among women; (d) effective referral processes and access to psychotherapeutic intervention.

Limited Societal Acknowledgement of the Negative Impact on Women

In the 1970's, attending to women's emotional needs after PL had not been a priority in both medical and mental health professions (Barry, 1981; Leon, 1987). At that time, it was common for the attending physician to deny the mother physical contact with the baby after the stillbirth, prescribe tranquilizers to ameliorate her grief, and suggest attempting another pregnancy to help forget about the gloomy occurrence (Berezin, 1982; Cullberg, 1971; Giles, 1970; Klaus & Kennell, 1976; Leon; Peppers & Knapp, 1980). A decade later, awareness that PL

was a devasting experience (Berezin; Leon; Peppers & Knapp) began to improve in certain ways. Responses such as shock, disbelief, insomnia, crying, rage, anxiety, somaticism, and yearning for and hallucinations involving the deceased were viewed as appropriate for a mother grieving a pregnancy loss (Dunlop, 1979; Kennell et al., 1970; Kirkley-Best & Kellner, 1982; Leon). Since that time, studies have shown an association between psychological distress (depression, anxiety, grief, PTS) and PL, and the trajectories of distress with each type of perinatal loss. Yet, there is limited understanding of how psychological distress after PL impacts the lives of women without children, women with a subsequent pregnancy, and mothers with a subsequent child. Some studies have shown that psychological distress during pregnancy has contributed to inadequate prenatal care, pregnancy and obstetric complications, preterm birth, low birth weight, and delayed fetal programming (Kingston et al., 2012a). Other studies have shown that psychological distress after the birth of a subsequent child brings increased risk for difficulties in maternal-child bonding and attachment, delayed infant and child development, challenges with parenting, child behavioral and mental health problems, and chronic adult disease related to encumbered fetal programming (Blackmore et al., 2011; Kingston et al., 2012b; Meredith et al., 2017; Mills et al., 2014; Murphy et al., 2014; O'Leary, 2015). Outcomes as extensive as those related to limited societal acknowledgement of PL's impact, leaves women and mothers isolated in their bereavement.

Limited Understanding in Close Correspondents of Being an Effective Support

With limited awareness, close correspondents (eg., partner, family, friend) may not know how to provide appropriate reassurance to someone they love who has experienced PL and ignore the event altogether. A common expectation is that women should "just get over it" and get pregnant again because "the excitement of another pregnancy will trump the sadness" felt

from the loss (C. C., personal communication, November 15, 2017). Cultural misconceptions may include the belief that PL "is an identifier of a woman who is cursed, defective, useless or shady" (C. C., personal communication) specifically with women who have repeated losses, creating a shame-provoking experience that denies mothers of social support (Mills et al., 2014). In addition, the incongruence in the expression of grief between individuals, specifically between women and their male partners, may contribute to psychological distress and relationship difficulties. Because close correspondents may have limited awareness of how they can be supportive in the event of a PL, women may find the experience more distressing to understand, more challenging to make meaning of, and more difficult to process and achieve resolution (Boss, 1999: Frost et al., 2007; Lang et al., 2011).

Limited Desire to Seek Resources for Emotional Health Among Women

Because few women seek, obtain, and retain psychosocial support, recovery challenges often follow miscarriage (Brier, 2008; Nikčević et al., 2007). One study found that only 15% of women who had experienced miscarriage contacted a psychologist and 1% contacted miscarriage-related associations (Séjourné et al., 2010b). Further, a meta-analysis showed that women who experienced a stillbirth or neonatal death refrained from announcing a subsequent pregnancy to their close correspondents (eg., partner, family, friend), and delayed forming an attachment to their baby and pregnancy as a method of self-protection (Mills et al., 2014). The meta-analysis also found that women contacted healthcare professionals more frequently to receive reassurance with minor changes in pregnancy signs, and experienced severe anxiety with ultrasound examinations because of its association with confirming previous perinatal loss (Mills et al.). Women's reticence to access psychotherapeutic supports and announce a new pregnancy to close correspondents, their emotional disengagement with their pregnancy and the growing

fetus, and their hypervigilance to the state of their pregnancy shows how previous PL alters the perception and enjoyment of subsequent pregnancies. With subsequent pregnancy being experienced as anxiety-provoking, women may benefit from having better access to effective psychotherapeutic interventions, and preferred emotional care.

Limited Effective Referral Processes and Psychotherapeutic Intervention

For women who sought psychotherapeutic intervention, interim interactions with healthcare professionals did not meet their expectations and dissatisfaction with the psychological services available, was common (Mills et al., 2014; Séjourné et al., 2010b). The psychological services accessed, and that were specific to women affected by miscarriage in some studies, were reported to have had minimal beneficial impact (Adolfsson et al., 2006; Lee et al., 1996; Lok & Neugebauer, 2007; Swanson, 1999). As such, the dissatisfaction women experienced with the first contact of referral to psychological services, and the limited availability of effective psychological interventions fortifies isolated bereavement and increased risk for maternal psychological distress.

Despite having knowledge about some of the risk factors that contribute to maternal psychological distress, little is known about psychotherapeutic interventions that effectively promote improvement in women affected by perinatal loss. Most women indicated, when asked, that they would prefer to be under the care of a therapist to help them cope with their miscarriage (Kong et al., 2010). A licensed therapist or registered psychologist would have the skills to effectively assist women in discussing their loss, help them to understand and process their emotions whilst offering non-judgmental support and access to additional resources (Brier, 2008; Trepal et al., 2005).

Effectiveness of Psychotherapeutic Intervention

Despite limited understanding of the effectiveness of psychotherapeutic interventions on psychological distress, there are some studies that have evaluated different counselling techniques on women who have experienced perinatal loss. Of the PL studies available, those that focused on cognitive behavioral therapy (CBT), interpersonal psychotherapy (IPT), and bereavement counselling outnumber studies evaluating other types of therapy. Other types of therapy included supportive expressive therapy (Cohen et al., 2019), psychotherapy (Leon, 1987), supportive psychotherapy (Freeman & Davis, 2009), group psychotherapy (Simon & Sliwka, 2012), supportive counselling (Kong et al., 2014), caring-based counselling (Côté-Arsenault et al., 2014; Swanson, 1999), therapeutic educational support (O'Leary & Henke, 2017), psychological debriefing (Lee et al., 1996), and couples-focused intervention (Swanson et al., 2009).

Cognitive Behavioral Therapy

Cognitive behavioral therapy (CBT), traced back to Beck (Beck, 1970) and Ellis (Ellis, 1962), was developed to provide explanation for the emotional and behavioral aspects of psychiatric disorders (Hofmann et al., 2012). Cognitive behavioral therapy is informed by the relationship between thoughts and behaviors, each of which influence the other (CAMH, 2019). In a cognitive behavioral therapy (CBT) session, the therapist customizes activities according to the psychological needs of the client to help them identify, question, and alter their thoughts, thought patterns, and beliefs associated with challenging emotional and behavioral reactions (Sockol, 2015). As such, cognitive behavioral therapy (CBT) purposefully reduces distress, improves functioning, and enhances well-being and quality of life (Kazantzis et al., 2018). To date, cognitive behavioral therapy (CBT) has been applied to many different clinical populations.

While a range of techniques to highlight features pertinent to the client's needs have been incorporated into treatment, the foundational principles of CBT remain intact (Kazantzis et al.). As such, CBT that would be appropriate for women affected by PL may incorporate a grief therapy protocol or have bereavement considerations.

While it is well-established that CBT is efficacious in preventing and treating major depression (Cuijpers et al., 2008; van Zoonen et al., 2014), including within the perinatal population (Sockol, 2015), there is limited research focusing on the mental health outcomes of women affected by perinatal loss. Eight studies that evaluated CBT in women affected by PL were accessed, three were randomized controlled trials (RCTs) (Kersting et al., 2011a; Kersting et al., 2013; Séjourné et al., 2010b), one was a pilot randomized controlled trial (RCT) (Bennett et al., 2012), one was a single group, pre-test, post-test study (Nakano et al., 2013), two were quasi-experimental studies (Khodakarami et al., 2017; Navidian & Saravani, 2018), and one was a case study (Cardoso & Nardi, 2011). All of these studies customized their CBT intervention to women who experienced PL or used the grief protocol (Bennett et al; Cardoso & Nardi; Kersting et al., 2011a; Kersting et al., 2013; Nakano et al., 2013; Navidian & Saravani; Séjourné et al.), except one study evaluating Fordyce Happiness CBT (Fordyce, 1983; Khodakarami et al.). All studies showed improvements with depression, anxiety, grief, PTS, coping, somatization, and overall mental health. However, in two studies, decreases in the severity of anxiety, somatization and grief were not significant (Bennett et al; Kersting et al., 2011a) and yet, similar results were not evident in other studies evaluating the same mental health outcomes. Moreover, it was noted consistently across all studies that the format and mode of the sessions, being in-person, in groups, via telephone, or online did not seem to impede improvement in the outcomes observed between the studies. One study suggested that delaying treatment did affect improvement in

mental health outcomes and thus, recommended that psychological intervention would best be initiated immediately after perinatal loss (Séjourné et al.).

Interpersonal Psychotherapy

Interpersonal psychotherapy (IPT) was originally designed by Klerman and colleagues in 1969 as a treatment for major depressive disorder (Klerman, 1969). The premise of interpersonal therapy (IPT) is that life events influence mood (Neugebauer et al., 2007), and its primary foci are the interpersonal issues associated with interpersonal disputes, role transitions, and grief and loss (Stuart, 2012). During the interpersonal therapy (IPT) process, the individual has the opportunity to alter relationship expectations and improve communication that can be utilized to build and effectively use social supports (Johnson et al., 2016). Using interpersonal therapy (IPT) to address the grief associated with PL may require the therapist to (a) discuss issues related to perinatal grief; (b) connect the circumstances and timing surrounding the loss with the onset of symptoms; (c) assist the client with acknowledging their PL-related psychological distress, discussing their loss with others, accessing existing social supports, and reconstructing a new relationship with their lost baby (Robertson et al., 2008; Stuart & Robertson, 2012).

Since the 1970's, numerous randomized controlled trials (RCTs) have shown that IPT is the primary treatment for major depressive disorder (Hollon & Shelton, 2001; National Collaborating Center for Mental Health, 2010) in a variety of populations (Spinelli & Endicott, 2003; Stuart, 2012) including perinatal (Clark et al., 2003; Koszycki et al., 2012; O'Hara et al., 2000; Pearlstein et al., 2006), and may prevent depression relapse (Cuijpers et al., 2011). Interpersonal psychotherapy (IPT) has also been effectively used to treat bipolar disorder, eating disorders, social phobia, PTSD (Stuart & Robertson, 2012), elevated grief and CG (Jacobs & Prigerson, 2000; Özer & Yüksel, 2016; Shear et al., 2005; Shear et al., 2014; Stuart &

Robertson). There is very little research that focused on mental health outcomes of women affected by PL after an IPT intervention. Three relevant studies were located in the literature, including one randomized pilot trial, one open pilot trial, and one case study (Johnson et al., 2016; Neugebauer et al., 2007; Özer & Yüksel). All studies showed improvements with a variety of mental health outcomes in women after perinatal loss. It is interesting to note, two of the three studies included women after loss that were diagnosed with a psychiatric illness, being either major depressive disorder or CG as a result of the perinatal loss (Johnson et al; Özer & Yüksel). This provides some evidence that IPT contributes to positive mental health outcomes in women who have received an official psychiatric diagnosis.

Grief Therapy

Grief therapy is based on the understanding that reconstructing significance and meaning in life without the deceased requires reorganizing the self and adapting to a new life story (Neimeyer, 2000). A person's reconstruction of meaning requires the transformation of their self-narrative which establishes self-understanding, consolidates a distinguishing range of emotions and goals, and guides personal presence in social environments (Neimeyer, 2004). Grief therapists offer their co-constructive presence, create a reflective environment, and engage the client in a vivid and experiential process to assist the articulation and reformation of self-narratives and meaning (Neimeyer, 2009). A comprehensive literature review showed that grief therapy can be beneficial, specifically to those who are experiencing significant clinical distress related to grief (Neimeyer & Currier, 2009), including CG or persistent complex bereavement disorder (PCBD). Since women who have experienced PL are at higher risk of developing CG or PCBD, healthcare professionals should assess for related symptoms long after PL and provide appropriate referrals for grief therapy (Ito et al., 2012; Özer & Yüksel, 2016).

There is one case study that focused on analyzing therapeutic change after constructivist grief therapy with a mother bereaved from a stillbirth (Alves et al., 2012). After receiving six full sessions of grief therapy, she no longer met criteria for CG (Alves et al.). The fact that there is a single study highlights the need for future research related to the effectiveness of grief therapy in women after perinatal loss.

Bereavement Counselling

A plethora of literature describes the grieving process experienced during the bereavement period, either as stages (Bowlby, 1980; Kübler-Ross, 1969), phases (Ramsey, 1979; Sanders, 1989), components or tasks (Worden, 2003), or tracks (Rubin, 1981; Rubin, 1999). Normal grieving involves intense responses initially following the loss that improves over time (Parkes, 1985; Parkes & Prigerson, 2010; Rando, 1984; Sanders). Initially, grief was viewed as a universal and healthy response aimed at letting go of the deceased and terminating one's relationship with them, a process referred to as grief work (Freud, 1917). However, in recent thought, grief is viewed as a process of continuing bonds (Klass et al., 1996) and grieving means searching for and building new meaning of life and death without the deceased (Malkinson, 2007; Neimeyer et al., 2000), and reorganizing one's relationship to the new meaning. Grieving means working towards establishing a balanced relationship with the deceased's representation without denial or avoidance of their memory or image (Sundin & Horowitz, 2002) during the period of bereavement.

Two randomized controlled trials (RCTs) examined the effectiveness of bereavement counselling on women/parents affected by pregnancy loss (Forrest et al., 1982; Simpson et al., 2015). These studies showed that bereavement counselling improved symptoms of depression, anxiety, grief, and general mental health in women affected by stillbirth or neonatal death, with

or without psychological problems associated with the perinatal loss (Forrest et al., Simpson et al.).

Other Psychological Support and Counselling

To date, there have been a few randomized controlled trials (RCTs) that examined the effect of psychological support and counselling services facilitated with women after pregnancy loss. First, the effect of psychological debriefing on British women after pregnancy loss showed improvements in anxiety, depression, and PTS symptoms (Kersting et al., 2011b). Although anxiety improved after psychological debriefing, it remained higher than the general population, and women's emotional adaptation did not improve (Kersting et al.). Second, the effect of medical/psychological interventions on British women's distress after miscarriage showed that psychological counselling improved their severity of grief, and decreased their anxiety related to medical investigations and consultations (Swanson, 1999). Third, the effect of three couples-focused intervention groups (nurse-caring, self-caring, combined-caring) showed that the nurse caring group (three counselling sessions) had the greatest influence on reducing American couple's depression and grief (Swanson et al., 2009). In addition, self-caring (three video and workbook modules) and combined caring (one counselling session and three self-caring modules) accelerated grief resolution for women and men (Swanson et al., 2009). Fourth, the effect of supportive counselling on depression, adjustment, and general mental health showed an insignificant improvement in general mental health, and no significant improvement in psychological distress for Chinese women after miscarriage (Kong et al., 2014). The findings from studies that evaluated other psychological supports and counselling, did not show consistent improvements with psychological distress in women after PL as was evident in the studies that evaluated CBT, IPT, bereavement counselling, or grief therapy.

Trauma-Focused Therapy

With advances being made in neurobiological research and theory, trauma-focused therapies based on the biopsychosocial trauma framework are showing promise in reducing symptoms related to adverse or traumatic experiences (Poole & Greaves, 2012). Trauma-focused therapies teach individuals how to regulate their emotions and calm their nervous systems (Poole & Greaves). Brainspotting, eye movement desensitization and reprocessing (EMDR), mentalization-based treatment, mindfulness, neurofeedback, and somatic (body) processing have been identified as trauma-focused therapies. Yet, despite the high prevalence of PTSD after PL (41%) (Gold et al., 2016) and women's lifetime risk for PTSD thereafter (29%) (Turton et al, 2001), there were no studies located in the literature that examined the effect of trauma-focused therapies.

Overall, the individual studies relevant to women who experienced PL consisted of eight studies that focused on CBT, three that examined IPT, two that evaluated bereavement counselling, one case study on grief therapy, and four RCTs describing other psychological and supportive interventions. While individual studies provide valuable information about the effectiveness of psychological interventions in women after PL, there is no systematic or comprehensive comparison of relevant individual studies in the literature.

Access to a Universal Screening, Referral and Intervention Initiative

Universal mental health screening remains outside routine perinatal practice despite guideline recommendations from an independent, non-profit organization (eg., beyondblue: the national depression initiative) (Austin et al., 2011b), and positive feedback from healthcare professionals (Chew-Graham et al., 2008) and healthcare consumers (Austin et al., 2011a). One study reported that only 20% of perinatal healthcare professionals were proactive with mental

health screening when providing prenatal care and less than 15% of pregnant or postpartum women received the help they needed (Kingston et al., 2014). Perinatal healthcare providers explain that they do not feel adequately trained to manage mental health problems in perinatal women (Berger et al., 2020; Smith et al., 2019) due to lack of confidence, knowledge, and referral resources (Smith et al., 2019). Only 14% of perinatal women with mental health issues received necessary treatment because of fragmented services and other system barriers (Bowen et al., 2012; Kim et al., 2010). Yet when asked, only 4% of women accessing prenatal care indicated they would deny a mental health screen, if offered (Kingston et al., Miller et al., 2009). Barriers such as these, highlight the importance of improving access to a universal, integrated mental health screening, referral and treatment initiative in the general perinatal population. Given the vulnerabilities associated with PL that women experience, timely access to a universal emotional health screening initiative with integrated referral procedures is crucial.

Developing online access to an integrated emotional health screening, referral and intervention initiative to reduce psychological distress complements the World Health Organization's (WHO, 2018) concept of universal care. This system would enable women to evaluate their own psychological distress regularly, conveniently, and autonomously with access to effective intervention when needed. Currently, no provinces in Canada have adopted such an initiative, highlighting an area that requires immediate attention. Perinatal healthcare providers are a primary point of engagement for making a difference for women affected by perinatal loss. By initiating discussions related to emotional health and routinely promoting an emotional health screening, referral and intervention initiative, providers will support women's emotional health after loss and promote psychological well-being for women and their families.

Gaps in the Evidence

Previous studies have provided strong evidence that PL is associated with elevated depression, anxiety, grief, and PTS symptoms, immediately after loss, during a subsequent pregnancy, and extending into parenthood however; significant issues remain. In addition to the limiting factors contributing to psychological distress (eg. societal, close correspondents, individual, systemic) in women after PL, a literature review found no related studies investigating longitudinal symptom trajectory patterns and early factors predictive of elevated symptom trajectories, no reviews summarizing effective psychotherapeutic interventions and their content and delivery method, and no studies identifying women's perception of their experiences with and perception of the barriers and facilitators to discussing emotional health with a healthcare provider, or their preferences in emotional care.

Aims and Thesis Overview

To address the limitations in seeking and accessing psychotherapeutic intervention and receiving preferred emotional care for psychological distress, the purpose of this doctoral thesis is to provide the evidence needed to inform the development of, and women's access to, a universal, integrated emotional health screening, referral and intervention initiative. This thesis is comprised of three independent studies including (a) one published manuscript; (b) one manuscript in editorial review; (c) two publishable manuscripts. The population of interest to this research program were women who had previously experienced PL, which may include miscarriage, stillbirth, or neonatal death.

This thesis is structured into a total of six chapters. **Chapter 2: Patterns and predictors of depressive and anxiety symptoms in mothers affected by previous prenatal loss in the ALSPAC birth cohort** is a secondary analysis designed to examine data that had been collected

from a population-based pregnancy and birth cohort known as the Avon Longitudinal Study of Parents and Children (ALSPAC). The specific aims were to (1) identify distinct trajectory patterns of depressive and anxiety symptoms from early pregnancy up to when the mother's child was 11 years old; (2) identify early factors predictive of elevated symptom trajectory patterns. The data from this analysis informed the discussion in Chapter 6. **Chapter 3: Effectiveness of psychotherapeutic interventions on psychological distress in women who have experienced perinatal loss: a systematic review protocol** is a protocol for a systematic review examining the influence of psychotherapeutic interventions on psychological distress in women affected by perinatal loss. The aims of this review of literature were to (1) determine the effectiveness of psychotherapeutic intervention on psychological distress and perception, coping, and adjustment in women who have experienced PL; (2) examine the content and delivery methods of effective psychotherapeutic interventions. This protocol describes the approach used when conducting the systematic review and meta-analysis as presented Chapter 4. **Chapter 4: Psychotherapeutic interventions to decrease psychological distress in women after perinatal loss: a systematic review and meta-analysis**, situates the review of the literature presented in Chapter 3 through a systematic review and meta-analysis of evidence-based research on psychotherapeutic interventions for anxiety, depressive, grief, and PTS symptoms in women after perinatal loss. The primary aim of this systematic review and meta-analysis was to analyse and synthesize research evaluating the effectiveness of psychotherapeutic interventions to treat or decrease psychological distress in women after prenatal loss or neonatal death. The secondary aim was to outline delivery methods of and narratively synthesize themes within the content of effective psychotherapeutic interventions. The findings generated within this systematic review and meta-analysis informed the discussion in Chapter 6. **Chapter 5:**

Women's perception of the barriers and facilitators related to discussing their emotional health after prenatal loss and their preferences in emotional care: a cross-sectional descriptive survey study is an online cross-sectional descriptive survey including thematic analysis that collected data to understand how to engage women affected by prenatal loss in emotional health screening and their preferences in emotional care. The aims were to explore women's (1) experiences of being asked about emotional health by a healthcare provider following prenatal loss; (2) perception of the barriers and facilitators to discussing emotional health with a healthcare provider; (3) preferences in the type and delivery method of emotional care. The results in this survey study highlight the importance of healthcare provider's routine practice of engaging women and their close correspondents in discussions about their emotional health immediately after prenatal loss and the importance of developing a universal, integrated emotional health screening, referral and intervention initiative. The findings in this study informed the general discussion in the final chapter. **Chapter 6: General Discussion,** is the final chapter. This chapter integrates and summarizes evidence from the secondary data analysis, the systematic review and meta-analysis, and the cross-sectional descriptive survey. Herein, the evidence is discussed within the context of perinatal mental health guidelines, implications, knowledge translation, limitations, and future research. The evidence presented in this doctoral thesis is crucial to the development of, and women's access to, a universal, integrated emotional health screening, referral and intervention initiative in Canada. Perinatal healthcare providers are ideally situated to facilitate healthcare reform by promoting a healthcare initiative such as this.

Chapter 2 Patterns and Predictors of Depressive and Anxiety Symptoms in Mothers Affected by Previous Prenatal Loss in the ALSPAC Birth Cohort.

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Charrois, E. M., Mughal, K. M., Arshad, M., Wajid, A., Bright, K. S., Giallo, R. & Kingston, D. (In review). Patterns and predictors of depressive and anxiety symptoms in mothers affected by previous prenatal loss in the ALSPAC birth cohort.

Abstract

Background: Studies investigating the patterns or predictors of mental health symptoms in expecting and postpartum mothers affected by prenatal loss, are limited. The objectives of this study were to explore longitudinal trajectory patterns of depressive and anxiety symptoms in women affected by prenatal loss from early pregnancy up to pre-adolescence, and to identify early factors predictive of elevated symptom trajectory patterns.

Methods: A total of 2,854 women from the Avon Longitudinal Study of Parents and Children, self-identified as having experienced a previous prenatal loss. A longitudinal latent class analysis was conducted to identify trajectory patterns of depressive and anxiety symptoms across 10 timepoints from 18-weeks' gestation up to 134-months postpartum, and multivariate regression analysis was used to identify predictors of elevated symptom trajectories.

Results: Three distinct trajectory patterns of depressive and anxiety symptoms were identified, reflecting low (54%), sub-clinical (34%), and clinical symptoms (12%) across time. Key predictors of longitudinal sub-clinical or clinical symptom trajectories included a history of severe depression or other psychiatric problem, experiencing three or more stressful events from mid-pregnancy to two months postpartum, inadequate social support, a history of induced abortion, and a history of abuse.

Limitations: Generalizability is strengthened by data from a longitudinal pregnancy and birth cohort and may be compromised by attrition, under-reporting, and recall bias.

Conclusion: Including factors predictive of long-term sub-clinical or clinical depressive and anxiety symptoms in early assessments will improve clinician's ability to identify women who may benefit from immediate or ongoing monitoring, and psychotherapeutic intervention after prenatal loss.

Keywords

Maternal depression, Maternal anxiety, Avon Longitudinal Study of Parents and Children (ALSPAC), Longitudinal trajectory pattern, Predictor, Prenatal loss

Introduction

The prevalence of clinically documented miscarriages reported in Canada, the USA, and the UK is 15 to 20% (Campillo et al., 2017; Geller et al., 2010; Kingston et al., 2012), with approximately 1% of pregnancies ending in stillbirth (Gold et al., 2007). However, these rates are likely underestimated in that they do not take into consideration the substantial number of miscarriages that were missed or remain undocumented within the healthcare system. For example, one study suggested that the true prevalence, including documented and undocumented miscarriages, is likely to occur in 30 to 40% of pregnancies annually (Michels & Tiu, 2007). Between 50 to 80% of women who experience prenatal loss (miscarriage or stillbirth) conceive again and of these subsequent pregnancies, approximately 86% occur within 18 months of the loss (Blackmore et al., 2011; Cuisinier et al., 1996; Meredith et al., 2017).

Psychological distress including depression and anxiety have been reported in pregnant women after a perinatal loss (Bergner et al., 2008; Blackmore et al., 2011; Hughes et al., 1999). For example, a systematic review of 17 studies showed that PL was frequently associated with depression and anxiety in women with a subsequent pregnancy (Debackere et al., 2008). In another meta-analysis of 19 studies with a total worldwide sample of over 35,000 pregnant women who had experienced a pregnancy loss, termination of pregnancy, or neonatal death found that their loss had significant small to medium effect on maternal depression and anxiety, respectively (Hunter et al., 2017).

Approximately 50% of women reported clinical depressive symptoms in their subsequent pregnancy (Armstrong, 2004) and many described experiencing pregnancy-specific anxiety (Franche & Mikail, 1999) primarily in relation to significant milestones and delivery (Côté-Arsenault, 2007). While previous studies have assessed psychological distress in expectant

women after prenatal loss and after the birth of a subsequent child, the vast majority of these studies were cross-sectional, and few examined how women's mental health changed across a subsequent pregnancy and postpartum (Hunter et al., 2017). Despite methodological variability between studies, those that have addressed persistence of symptoms in women who experienced loss found that elevated depressive and anxiety symptoms in subsequent pregnancy continued for almost three years after the birth of a subsequent child (Blackmore et al., 2011). A better understanding of how women's psychological distress changes across pregnancy and the postnatal period following a previous PL is important because it will differentiate women with pregnancy-specific distress from those who experience poor mental health over time and reveal periods during child rearing which mothers may find increasingly challenging.

Studies have also reported that elevated depressive and anxiety symptoms in pregnancy subsequent to PL are associated with adverse outcomes related to maternal-child attachment (Armstrong & Hutti, 1998; Armstrong et al., 2009; Gaudet et al., 2010) wherein a disorganized attachment style was common (Heller & Zeanah, 1999; Hughes et al., 1999). Mothers displayed more negative emotions and perceived their infant as having more problematic behaviors and greater difficulty establishing routines with sleeping and eating, than women who did not have a previous pregnancy loss (Hunfeld et al., 1996; Hunfeld et al., 1997) Taken together, these findings highlight the importance of identifying early predictors associated with long-term elevated depressive and anxiety symptoms.

Factors predictive of elevated depressive and anxiety symptoms in a subsequent pregnancy following prenatal loss include: a history of depression (Blackmore et al., 2011), depression during pregnancy (Hughes et al., 1999), two or more pregnancy losses (Fertl et al., 2008), and younger maternal age at birth (Woods-Giscombé et al., 2010). Inconsistent or no

associations have been found for a short interpregnancy interval (< 12 months since loss) (Gravensteen et al., 2018; Haghparast et al., 2016; Hughes et al., 1999; Hunfeld et al., 1997), and support that was perceived as inadequate (Bicking-Kinsey et al., 2015). A review of the current literature highlights that research identifying predictors of poor mental health during pregnancy and the postnatal period following a previous prenatal loss is limited, and no studies have identified early factors associated with long-term trajectory patterns of poor mental health. Further, no similar studies conducted an analysis to identify an association between history of abuse or abortion, attainment of a university degree, or maternal ethnicity, and elevated depressive or anxiety trajectories in expectant and postpartum mothers affected by prenatal loss. A better understanding of the factors associated with poor mental health during pregnancy and postpartum is vital for early treatment planning, referral, and surveillance for mothers and to protect the critical early years of their child's development.

The objective of the current study was to address gaps in knowledge about how women's mental health changes across the pregnancy and postnatal period following a previous prenatal loss, and the predictors associated with poor mental health patterns. The specific aims were to (1) identify distinct trajectory patterns of depressive and anxiety symptoms from early pregnancy up to when the mother's child was 11 years old; (2) identify early factors predictive of elevated symptom trajectory patterns.

Methods

Study Design and Setting

Data for this secondary analysis study were drawn from the Avon Longitudinal Study of Parents and Children (ALSPAC), a longitudinal population-based pregnancy and birth cohort designed to examine the association of environmental and genetic factors with parental and child

development and health (Fraser et al., 2012). Residents of Avon in Southwest England with expected delivery dates between the 1st of April 1991 and the 31 of December 1992 were invited to participate in the ALSPAC study. From the 14,541 pregnancies initially enrolled, 674 pregnancies were excluded, most (89.6%) related to the absence of a live birth, resulting in 13,867 pregnancies across 13,761 women (Fraser et al., 2012). The ALSPAC study design, recruitment and data collection has been described previously (Boyd et al., 2013; Fraser et al., 2012), and details of the data are available through a fully searchable data dictionary and variable search tool at http;//www.bristol.ac.uk/alspac/researchers/our-data/ (University of Bristol, 2021). Ethics approval for the study was granted by the ALSPAC Ethics and Law Committee and the Local Research Ethics Committee wherein participants, under these recommendations, provided informed consent for use of the data collected via questionnaires and clinics.

Participants

In the original ALSPAC cohort, 2,854 (18.5%) pregnant women identified that they had experienced a previous miscarriage or stillbirth. In the self-report survey administered at 18 weeks' gestation, mothers who answered yes to either question, 'have you ever had any miscarriage?' or 'have you ever had a stillborn baby?', were eligible for the current study. Women who responded yes to both questions were removed from the sample such that repeat prenatal loss could be analyzed as a predictor. Mothers who indicated they had a baby that was born alive and died after birth, were excluded.

While the parameters defining miscarriage and stillbirth vary internationally, the current study included mothers who experienced miscarriage or stillbirth into a single cohort to represent prenatal loss. This decision was based on a previous study (Blackmore et al., 2011) using data drawn from ALSPAC which found no differences in depressive and anxiety symptoms at 18

weeks' gestation and 33 months postpartum between mothers who had previous miscarriage and mothers who had a previous stillbirth.

Measures

Main Outcomes: Anxiety and Depressive Symptoms

The Edinburgh Postnatal Depression Scale (EPDS) is a 10-item self-reported tool that has been validated for use in pregnant and postnatal women (Bergink et al., 2011; Murray & Cox, 1990) that measures depressive symptoms (Cox et al., 1987). A score of ≥13 has been validated as the ideal cut-off score in identifying probable clinical depression in postnatal women (Cox et al., 1987; Korhonen et al., 2012; Meltzer-Brody et al., 2013) and non-postnatal women (Cox et al., 1996). The psychometric properties of the EPDS had excellent internal consistency in all studies with Cronbach's alpha ranging from .84 to .94 (Walker et al., 2015). Maternal depressive symptoms were measured at 10 timepoints including 18 weeks' and 32 weeks' gestation, 8 weeks postpartum, and 8, 21, 33, 61, 73, 97 and 134 months postpartum.

The Crown-Crisp Experiential Index (CCEI) anxiety subscale is an 8-item self-assessment inventory (Birtchnell et al., 1988) that has been validated to measure free-floating anxiety (Crown & Crisp, 1966), a non-specific symptom common to Generalized Anxiety Disorder (American Psychiatric Association, 2013). A clinical cut-off score has not been validated for this tool and thus, the top 15% of the sample was used as a guide to identify mothers who were considered anxious, which was quantified by a cut off value of ≥ 8 (Capron et al., 2015; Glover et al., 2004; Heron et al., 2004). While the CCEI has not been established as a valid measurement tool to measure pregnancy-related anxiety specifically (Brunton et al., 2015), the Cronbach's alpha with the current study's sample was good, ranging from 0.807 to

0.872. Maternal anxiety symptoms were measured at 8 timepoints including 18 weeks' and 32 weeks' gestation, 8 weeks postpartum, and 8, 21, 33, 61 and 73 months postpartum.

Potential Factors Predictive of Depressive and Anxiety Symptom Trajectories

Potential predictive factors during pregnancy (12, 18- and 32-weeks' gestation) and early postpartum (8 weeks) were assessed. Variables assessed during pregnancy included history of alcoholism, history of severe depression, history of other psychiatric problems, history of physical abuse, history of abortion, anxiolytic or antidepressants used this pregnancy, mother having attained a university degree (yes vs. no), repeated pregnancy loss (yes, e.g., 2 or more vs. no, e.g., 1 or less), short interpregnancy interval (yes, e.g., < 12 months vs. no, 12+ months), and ethnicity (non-Caucasian vs. Caucasian). Variables assessed early postpartum included maternal age at birth (24 years of age (YOA) and younger vs. 25 to 34 YOA vs. 35 YOA and older), preterm birth (yes, e.g., < 37 weeks' gestation vs. no, e.g., 37+ weeks' gestation), maternal perception of social support since birth (inadequate vs. adequate) and number of stressful life events since mid-pregnancy (3 or more vs. 1 to 2 events vs. no event). The stressful life events variable considered events such as death, illness, crime, relationship issues, abuse, work or financial issues, relocation, homelessness, marriage, suicide attempt, rejection of partner to pregnancy, or bleeding during pregnancy (fear of miscarriage). In the ALSPAC cohort, a history of repeated prenatal loss and history of depression were previously reported as significant predictors of elevated maternal depressive and anxiety symptoms in the pregnancy and postnatal period (up to 33 months) after a prenatal loss (Blackmore et al., 2011).

Data Analysis

Descriptive statistics were used to summarise sample characteristics and frequency of potential predictors with complete cases only. Longitudinal latent class analysis (LCA) was used

to identify distinct patterns or trajectories of depressive and anxiety symptoms over the study period (Aim 1). A series of models were estimated separately for depressive and anxiety symptoms using MPlus version 8.2 (Muthén & Muthén, 2017). To identify the most parsimonious model, the number of classes were increased with each successive model, and the Likelihood ratio statistic (L^2), Akaike's Information Criteria (AIC) and Bayesian Information Criterion (BIC) for each model was evaluated. Lowering values of L^2, AIC and BIC reflected improving parsimony in models of better fit. Additional indices were used to evaluate model fit with each successive model build. Entropy evaluated the precision of assigning individual cases to the most suitable latent class membership (≥ 0.8) and the Vuong-Lo-Mendall-Rubin likelihood ratio test ($p \leq 0.05$) illustrated significant differences between each model. Class size confirmed the model with the best fit. Class membership for depressive and anxiety symptoms was saved as separate variables in an SPSS (George & Mallery, 2018) dataset and used in univariate and multivariate logistic regression analyses. Results from these analyses are presented as odds ratio (OR) (unadjusted and adjusted) and 95% confidence intervals (CIs).

Univariate and multivariate logistic regression analyses were used to identify early factors significantly associated with elevated depressive and anxiety symptom trajectories using SPSS version 25 (Aim 2) (George & Mallery, 2018). Further analysis was conducted to evaluate changes in pseudo R-square values (eg., Cox-Snell, Nagelkerke, McFadden) and determine whether these factors predict elevated depression and anxiety trajectories over and above women's EPDS and CCEI scores at 18 weeks gestation ($p < 0.05$) (Freese & Long, 2006).

The univariate and multivariate logistic regression analyses were conducted with complete cases and imputed data using multiple imputation. The imputation model included all the study variables, and twenty datasets were imputed to replace data that was evaluated as

missing completely at random (MCAR) for the variables used in the analyses. In the regression analysis, each predictor variable that showed a significant association with elevated symptom trajectories individually were analysed for significant association when controlling for shared variance between variables ($p<0.05$). Given that the regression analyses yielded similar results when conducted with the sample as complete cases and with the sample including imputed data, only those using imputed data are presented within.

Results

Sample Characteristics

Of the 13,761 mothers who were part of the ALSPAC cohort (Fraser et al., 2012), 2,854 were included as the analysis sample by identifying a prenatal loss (miscarriage or stillbirth) prior to their current pregnancy. The majority of mothers in the analysis sample were between the ages of 25 and 34 years, Caucasian, married, primiparous, did not have a university degree and at three years postpartum had a family income of less than £300 per week (Table 2.1), similar to the characteristics of the overall ALSPAC cohort. Most mothers in the sample indicated they had experienced one prenatal loss only (57% occurred with their last pregnancy), experienced three or more stressful life events since mid-pregnancy, and perceived their social support after childbirth as inadequate (Table 2.2). The majority indicated they did not have a history of alcoholism, severe depression or other psychiatric problem, did not deliver their baby prematurely, and did not take anti-depressants or anxiolytics during pregnancy. Twenty-six percent indicated they had experienced physical abuse in the past and 19% reported they had previously induced an abortion. Slightly more mothers identified a short interpregnancy interval (< 12 months) than those who did not.

Women's mean EPDS score was 7.35 (SD 5.047) and their mean CCEI score was 5.2 (SD 3.642) at 18 weeks gestation of a pregnancy subsequent to prenatal loss. Comparatively, in women who had not experienced previous prenatal loss, their mean EPDS and CCEI scores at 18 weeks gestation were 6.86 (SD 4.806) and 4.85 (SD 3.527), respectively.

Table 2.1: Socio-Demographic Descriptors of Study Participants

Descriptives	**N (%)**
Maternal age at birth[a]	
< 25 years	381 (13.3)
25-34 years	1678 (58.8)
> 34 years	422 (14.8)
Missing data	373 (13.1)
Present marital status	
Married	2154 (75.5)
Other (eg. Single, separated, divorced, widowed)	597 (20.9)
Missing data	103 (3.6)
Highest level of education	
University degree	314 (11)
No university degree	2282 (80)
Missing data	258 (9)
Family income (£) at 33 months postpartum	
< 100	161 (5.6)
100 - 199	339 (11.9)
200 – 299	548 (19.2)
300 – 399	329 (11.5)
> 400	438 (15.4)
Missing data	1039 (36.4)
Maternal ethnicity	
Non-Caucasian	60 (2.1)
Caucasian	2502 (87.7)
Missing data	292 (10.2)
Parity[b]	
None	821 (28.8)
One	1059 (37.1)
Two or more	897 (31.4)
Missing data	77 (2.7)

[a] assessed at 8 weeks postpartum
[b] number of successful pregnancies

Table 2.2: Frequency of Potential Predictors in Study Participants

Descriptives	**N (%)**
History of repeated prenatal loss (2 or more)	
Yes	665 (23.3)
No	2138 (74.9)
Missing data	51 (1.8)
History of alcoholism	
Yes	33 (1.2)
No	2567 (89.9)
Missing data	254 (8.9)
History of severe depression	
Yes	312 (10.9)
No	2288 (80.2)
Missing data	254 (8.9)
History of other psychiatric problem	
Yes	76 (2.7)
No	2524 (88.4)
Missing data	254 (8.9)
Preterm birth	
Yes	206 (7.2)
No	2639 (92.5)
Missing data	9 (.3)
Number of stressful life events[a]	
Three or more	1577 (55.3)
One to two events	715 (25.1)
No event	181 (6.3)
Missing data	381 (13.3)
Perceived adequacy of social support[b]	
Inadequate	1877 (65.8)
Adequate	604 (21.1)
Missing data	373 (13.1)
Anxiolytics from early to mid-pregnancy	
Yes	24 (.85)
No	2806 (98.3)
Missing data	24 (.85)
Antidepressants from early to mid-pregnancy	
Yes	31 (1.1)

No	2798 (98)
Missing data	25 (.9)
History of physical abuse	
Yes	752 (26.3)
No	1575 (55.2)
Missing data	527 (18.5)
History of abortion	
Yes	531 (18.6)
No	2286 (80.1)
Missing data	37 (1.3)
Short interpregnancy interval (< 12 months)	
Yes	1112 (39)
No	1041 (36.5)
Missing data	701 (24.5)

[a] from mid-pregnancy to 2 months postpartum
[b] from childbirth to 2 months postpartum

Latent Class Analysis for Depressive and Anxiety Symptom Trajectories

In the analysis, the Vuong-Lo p-value ($p \leq 0.05$), entropy indices (entropy≥ 0.8) and the improving model fit displayed by decreasing index values (L^2, AIC, BIC) across the 1-class, 2-class, 3-class, and 4-class model build identified a 3-class model as the most parsimonious and accepted as the final model (Table 2.3). Further, the sample size for each trajectory class in the 3-class model solution for depressive and anxiety symptoms was adequate enough to be meaningful.

Table 2.3: Indices for the Most Parsimonious Latent Class Analysis Model of Depressive and Anxiety Symptoms

Depressive symptoms

Model	L^2	BIC	AIC	Entropy	Vuong-Lo-Mendell-Rubin	p-value
Class 1	-62643.89	125446.82	125327.78	--	--	--
Class 2	-59146.38	118539.28	118354.77	0.83	1 vs 2 classes	0.00
Class 3	-58088.54	116511.06	116261.08	0.82	2 vs 3 classes	0.00
Class 4	-57850.17	116121.79	115806.35	0.74	3 vs 4 classes	0.06

Anxiety symptoms

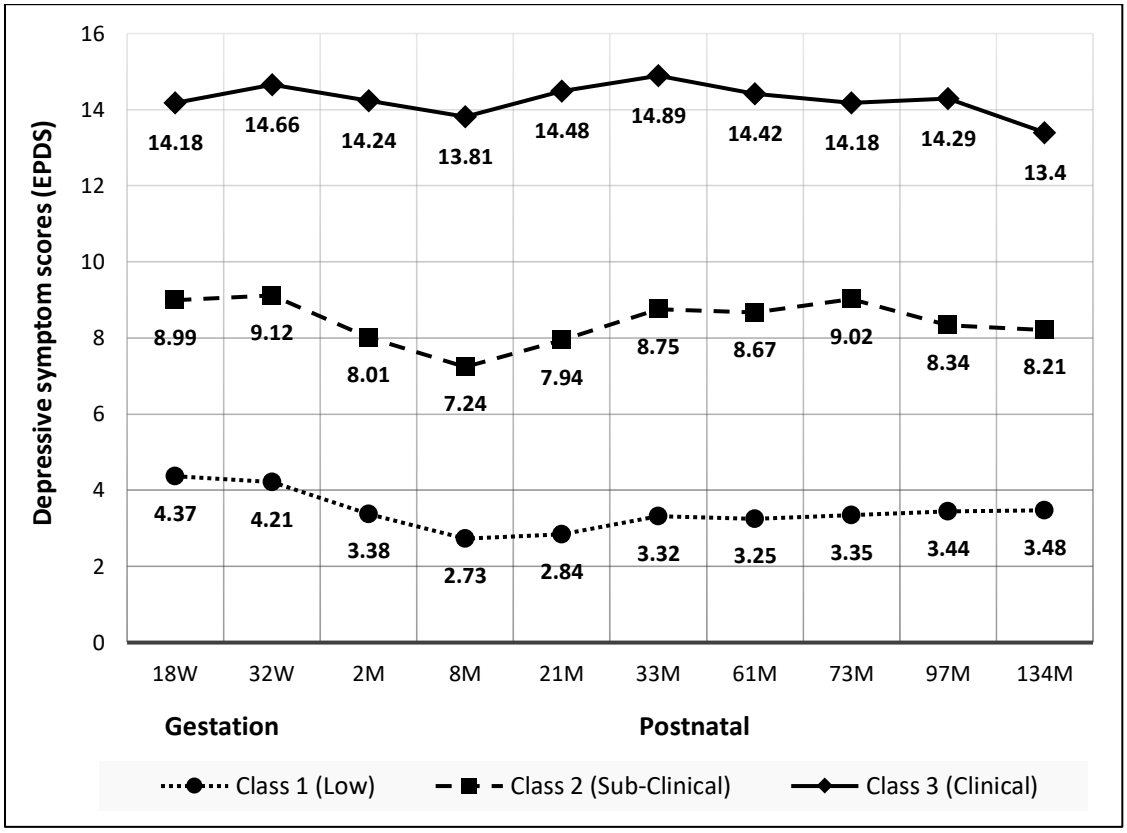
Model	L^2	BIC	AIC	Entropy	Vuong-Lo-Mendell-Rubin	p-value
Class 1	-50091.39	100310.85	100214.78	--	--	--
Class 2	-47452.27	95103.45	94954.53	0.84	1 vs 2 classes	0.00
Class 3	-46775.08	93820.67	93618.15	0.77	2 vs 3 classes	0.00
Class 4	-46506.40	93354.94	93098.81	0.82	3 vs 4 classes	0.09

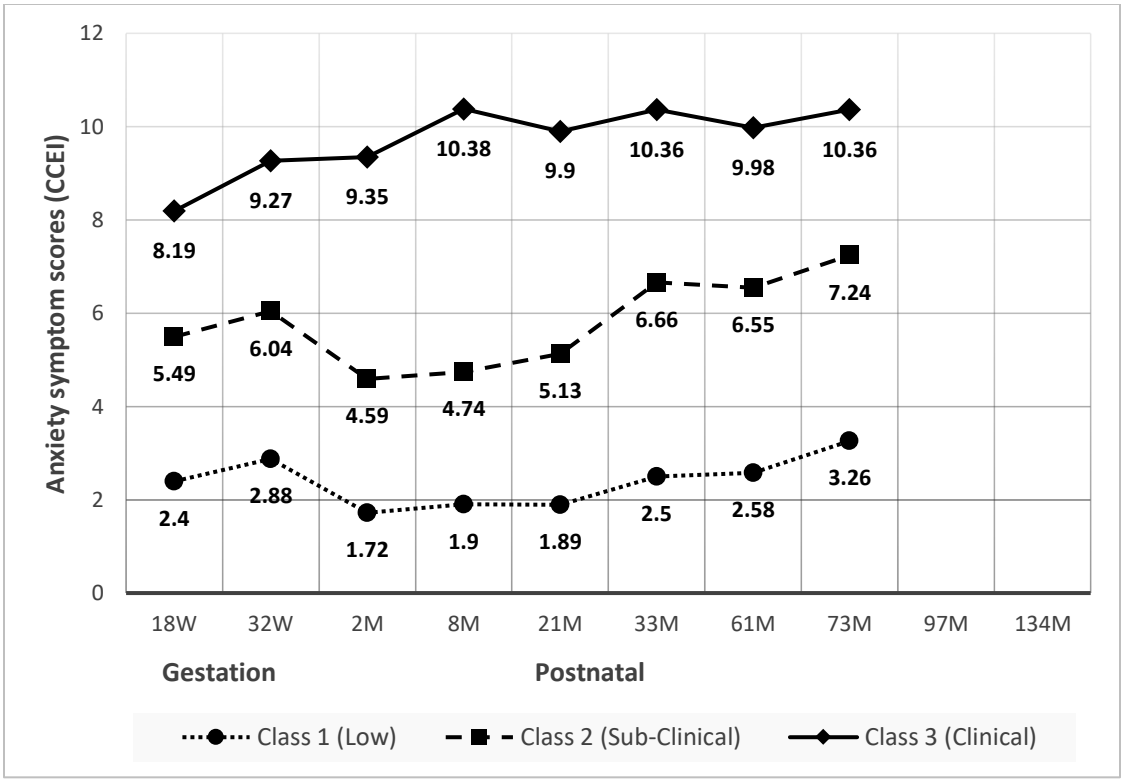
L^2= Likelihood ratio statistic. AIC=Aikaike Information Criteria. BIC=Bayesian Information Criterion.

In relation to depressive symptoms, the first trajectory class (49.4%) was comprised of mothers who reported non-clinical depressive symptoms on the EPDS across time (0 to < 7) (Figure 2.1). Mothers in the second trajectory class (37.8%) appraised their depressive symptoms in the sub-clinical severity range (7 to < 13) and mothers in the third trajectory class (12.8%) evaluated their depressive symptoms within the clinical severity range (≥13).

In relation to anxiety symptoms, the first and largest trajectory class (57.7%) consisted of mothers who reported non-clinical anxiety symptoms from early pregnancy up to middle childhood (0 to < 4) (Figure 2.1). Mothers in the second trajectory class (30.9%) evaluated their anxiety symptoms as sub-clinical in severity (4 to < 8) and mothers in the third trajectory class (11.4%) rated their anxiety symptoms as clinical (≥ 8).

Figure 2.1: Estimated EPDS and CCEI Anxiety Subscale Means for Maternal Depressive and Anxiety Symptom Trajectory Classes





Early Factors Predictive of Long-Term Sub-Clinical and Clinical Trajectories

Significant factors ($p \leq 0.05$) predictive of long-term sub-clinical and clinical depressive and anxiety symptoms are reported in Table 2.4 and 2.5. These key predictors included a history of severe depression, history of other psychiatric problems, history of induced abortion, history of physical abuse, three or more stressful life events, and inadequate social support after childbirth. Further, not having attained a university degree was associated with long-term sub-clinical and clinical depressive symptoms; and taking anti-depressants during pregnancy and being non-Caucasian were factors predictive of longitudinal clinical depressive symptoms. When controlling for EPDS and CCEI scores at 18 weeks gestation ($p < 0.05$), increased pseudo-R squared values (eg. Nagelkerke) indicate that the early factors included in the multivariate

logistic regression models predict sub-clinical and clinical depression and anxiety trajectories over and above women's EPDS and CCEI scores at 18 weeks gestation ($p < 0.05$).

Table 2.4: Predictors of Sub-Clinical and Clinical Depressive Symptoms from Early Pregnancy to Eleven Years Postpartum

Predictors	Univariate OR (95% CI), *p*	Multivariate Adjusted OR(95% CI), *p*	Univariate OR (95% CI), *p*	Multivariate Adjusted OR (95% CI), *p*
	Sub-Clinical Depressive	Sub-Clinical Depressive	Clinical Depressive	Clinical Depressive
Younger Maternal Age at Birth				
24 YOA or younger	1.20 (.926 – 1.55) .168	1.11 (.876 – 1.40) .391	1.55 (1.10 – 2.18) .014	1.37 (.965 – 1.94) .079
25 to 35 YOA	Ref.[a]	Ref.	Ref.	Ref.
Older Maternal Age at Birth				
35 YOA and older	1.01 (.747 – 1.36) .961	--	1.19 (.688 – 2.05) .526	--
25 to 35 YOA	Ref.	--	Ref.	--
Mom Attained a University Degree				
No	1.47 (1.14 – 1.89) .003	1.51 (1.16 – 1.96) .002	2.21 (1.42 – 3.44) <0.001	2.01 (1.26 – 3.20) .004
Yes	Ref.	Ref.	Ref.	Ref.
Mom's Ethnicity				
Non-Caucasian	1.78 (.984 – 3.22) .057	1.86 (.985 – 3.50) .056	2.80 (1.38 – 5.68) .005	2.77 (1.22 – 6.27) .015
Caucasian	Ref.	Ref.	Ref.	Ref.
History of Repeated Prenatal Loss (2 or more)				
Yes	1.06 (.871 – 1.28) .585	.984 (.804 – 1.20) .873	1.53 (1.18 – 1.98) .001	1.25 (.930 – 1.68) .139
No	Ref.	Ref.	Ref.	Ref.
History of Alcoholism				
Yes	2.04 (.840 – 4.93) .116	1.44 (.558 – 3.71) .451	4.91 (1.99 – 12.13) .001	2.06 (.714 – 5.92) .182
No	Ref.	Ref.	Ref.	Ref.
History of Severe Depression				
Yes	2.60 (1.91 – 3.52) <0.001	2.02 (1.47 – 2.79) <0.001	7.70 (5.41 – 10.97) <0.001	4.82 (3.27 – 7.11) <0.001
No	Ref.	Ref.	Ref.	Ref.
History of Other Psychiatric Problem				
Yes	2.60 (1.39 – 4.87) .003	1.93 (.999 – 3.72) .050	8.03 (4.22 – 15.26) <0.001	3.94 (1.90 – 8.17) <0.001
No	Ref.	Ref.	Ref.	Ref.

Preterm Birth				
Yes	1.03 (.749 – 1.41) .872	.944 (.678 – 1.32) .735	1.60 (1.08 – 2.39) .021	1.35 (.864 – 2.12) .186
No	Ref.	Ref.	Ref.	Ref.
Number of Stressful Life Events[b]				
Three or more	2.41 (1.66 – 3.49) <0.001	2.09 (1.42 – 3.07) <0.001	3.45 (1.81 – 6.58) <0.001	2.38 (1.21 – 4.70) .013
One to two events	1.44 (.977 – 2.13) .066	1.44 (.961 – 2.16) .077	1.64 (.850 – 3.18) .140	1.60 (.801 – 3.19) .184
No event	Ref.	Ref.	Ref.	Ref.
Perceived Adequacy of Social Support[c]				
Inadequate	2.21 (1.81 – 2.70) <0.001	2.03 (1.65 – 2.50) <0.001	3.73 (2.59 – 5.38) <0.001	3.14 (2.14 – 4.60) <0.001
Adequate	Ref.	Ref.	Ref.	Ref.
Anxiety Medication Early to Mid-Pregnancy				
Yes	1.66 (.620 – 4.46) .312	.727 (.235 – 2.25) .579	4.45 (1.61 – 12.34) .004	.699 (.186 – 2.63) .596
No	Ref.	Ref.	Ref.	Ref.
Depression Medication Early to Mid- Pregnancy				
Yes	3.46 (1.23 – 9.70) .019	2.77 (.876 – 8.76) .083	10.41 (3.70 –29.33) <0.001	4.71 (1.35 – 16.40) .015
No	Ref.	Ref.	Ref.	Ref.
History of Physical Abuse				
Yes	1.62 (1.34 – 1.95) <0.001	1.41 (1.16 – 1.72) .001	2.06 (1.59 – 2.67) <0.001	1.49 (1.12 – 1.99) .007
No	Ref.	Ref.	Ref.	Ref.
History of Abortion				
Yes	1.42 (1.15 – 1.76) .001	1.27 (1.02 – 1.58) .034	2.35 (1.79 – 3.09) <0.001	1.91 (1.41 – 2.58) <0.001
No	Ref.	Ref.	Ref.	Ref.
Short Interpregnancy Interval (<12 months)				
Yes	.900 (.746 – 1.08) .266	--	.785 (.599 – 1.03) .079	--
No	Ref.	--	Ref.	--

[a] Reference category

[b] from mid-pregnancy to 2 months postpartum

[c] from childbirth to 2 months postpartum

Table 2.5: Predictors of Sub-Clinical and Clinical Anxiety Symptoms from Early Pregnancy to Six Years Postpartum

Predictors	Univariate OR (95% CI), *p*	Multivariate Adjusted OR (95% CI), *p*	Univariate OR (95% CI), *p*	Multivariate Adjusted OR (95% CI), *p*
	Sub-Clinical Anxiety	Sub-Clinical Anxiety	Clinical Anxiety	Clinical Anxiety
Younger Maternal Age at Birth				
24 YOA or younger	1.07 (.823 – 1.38) .626	--	1.43 (.992 – 2.06) .056	--
25 to 35 YOA	Ref.[a]	--	Ref.	--
Older Maternal Age at Birth				
35 YOA and older	1.12 (.885 – 1.41) .350	--	1.25 (.854 – 1.84) .246	--
25 to 35 YOA	Ref.	--	Ref.	--
Mom Attained a University Degree				
No	.907 (.701 – 1.17) .459	--	1.27 (.840 – 1.92) .258	--
Yes	Ref.	--	Ref.	--
Mom's Ethnicity				
Non-Caucasian	1.21 (.678 – 2.15) .523	--	1.46 (.688 – 3.12) .322	--
Caucasian	Ref.	--	Ref.	--
History of Repeated Prenatal Loss (2 or more)				
Yes	1.08 (.885 – 1.31) .468	.974 (.794 – 1.20) .802	1.36 (1.04 – 1.77) .027	1.09 (.814 – 1.47) .556
No	Ref.	Ref.	Ref.	Ref.
Fertility Treatment to Conceive This Pregnancy				
Yes	1.04 (.679 – 1.61) .843	--	.733 (.355 – 1.51) .401	--
No	Ref.	--	Ref.	--
History of Alcoholism				
Yes	1.89 (.852 – 4.18) .118	1.15 (.481 – 2.77) .749	3.06 (1.23 – 7.63) .016	1.23 (.413 – 3.65) .712
No	Ref.	Ref.	Ref.	Ref.
History of Severe Depression				
Yes	3.61 (2.72 – 4.81) <0.001	3.03 (2.25 – 4.10) <0.001	7.14 (5.11 – 9.96) <0.001	4.82 (3.36 – 6.92) <0.001
No	Ref.	Ref.	Ref.	Ref.
History of Other Psychiatric Problem				
Yes	4.17 (2.21 – 7.85) <0.001	3.05 (1.57 – 5.93) .001	11.38 (5.93 –21.84) <0.001	6.28 (3.02 – 13.07) <0.001
No	Ref.	Ref.	Ref.	Ref.

Preterm Birth				
Yes	1.11 (.811 – 1.50) .528	--	.801 (.486 – 1.32) .385	--
No	Ref.	--	Ref.	--
Number of Stressful Life Events[b]				
Three or more	2.52 (1.70 – 3.73) <0.001	2.12 (1.43 – 3.16) <0.001	5.03 (2.29 – 11.06) <0.001	3.45 (1.55 – 7.71) .003
One to two events	1.56 (1.03 – 2.34) .034	1.51 (.997 – 2.28) .052	2.16 (.950 – 4.89) .066	2.01 (.880 – 4.58) .098
No event	Ref.	Ref.	Ref.	Ref.
Perceived Adequacy of Social Support[c]				
Inadequate	1.67 (1.35 – 2.08) <0.001	1.50 (1.21 – 1.87) <0.001	2.99 (2.07 – 4.33) <0.001	2.42 (1.65 – 3.56) <0.001
Adequate	Ref.	Ref.	Ref.	Ref.
Anxiety Medication Early to Mid-Pregnancy				
Yes	1.31 (.495 – 3.44) .590	.569 (.181 – 1.79) .333	3.59 (1.36 – 9.50) .010	.723 (.189 – 2.77) .636
No	Ref.	Ref.	Ref.	Ref.
Depression Medication Early to Mid- Pregnancy				
Yes	1.89 (.818 – 4.36) .136	1.20 (.455 – 3.17) .712	4.28 (1.75 – 10.43) .001	1.48 (.458 – 4.77) .514
No	Ref.	Ref.	Ref.	Ref.
History of Physical Abuse				
Yes	1.48 (1.23 – 1.78) <0.001	1.26 (1.04 – 1.53) .020	2.08 (1.61 – 2.70) <0.001	1.54 (1.15 – 2.04) .003
No	Ref.	Ref.	Ref.	Ref.
History of Abortion				
Yes	1.39 (1.13 – 1.72) .002	1.25 (1.00 – 1.56) .046	2.13 (1.62 – 2.81) <0.001	1.74 (1.29 – 2.34) <0.001
No	Ref.	Ref.	Ref.	Ref.
Short Interpregnancy Interval (<12 months)				
Yes	.862 (.721 – 1.03) .104	--	.914 (.707 – 1.18) .492	--
No	Ref.	--	Ref.	--

[a] Reference category

[b] from mid-pregnancy to 2 months postpartum

[c] from childbirth to 2 months postpartum

Discussion

Among women with previous prenatal loss, the current study identified three distinct longitudinal trajectory patterns of low/non-clinical, moderate/sub-clinical, and high/clinical symptom severity that persisted from early pregnancy to middle childhood for anxiety and to pre-adolescence for depressive symptoms. Approximately 50.6% of mothers comprised the sub-clinical and clinical depressive trajectories and 42.3% comprised the sub-clinical and clinical anxiety trajectories. Mental health symptoms of sub-clinical severity have been found to be associated with (a) evolving symptoms of clinical severity at various points within the first 10 years postpartum (Wajid et al., 2020); (b) functional impairments in career and family (Prochaska et al, 2012); (c) emotional-behavioral challenges in children (Giallo et al., 2015b; Kingston et al., 2018; Mughal et al., 2019). These findings highlight the importance of assessing and monitoring sub-clinical symptoms as well as clinical symptoms, across time.

Fluctuations in Elevated Trajectory Patterns Across Time

This study found an overall increase in mean scores for anxiety symptoms from 18 weeks' gestation to 73 months postpartum and a slight overall decrease in depressive symptoms from pregnancy to 134 months postpartum. The fluctuations across sub-clinical and clinical depressive trajectory patterns included an increase between 18- and 32- weeks' gestation followed by a decline until eight months postpartum, a steady incline until 33 months postpartum with minor differences thereafter. Both anxiety trajectory patterns demonstrated overall similarities in their fluctuation except between 32 weeks' gestation and 21 months postpartum. While the sub-clinical anxiety trajectory showed a dramatic decrease between 32 weeks' gestation and two months postpartum which remained lower from 8 months to 21 months, the

clinical anxiety trajectory showed an increase between 32 weeks' gestation and two months postpartum, to a high point at 8 months and a decrease at 21 months.

Studies with similar results evaluated depressive or anxiety symptoms longitudinally from the third trimester of a subsequent pregnancy or after the birth of a subsequent child. These results showed similar patterns to the current study's sub-clinical and clinical depressive trajectories (EPDS) and sub-clinical anxiety trajectory (CCEI) regardless of whether mean value, point prevalence, or both were examined (Blackmore et al., 2011; Gravensteen et al., 2018; Hughes et al., 1999; Hunfeld et al., 1997).

Dissimilar to the current study, studies that focused on examining anxiety symptom trajectories spanning only the prenatal period showed decreases between the first and third trimester of pregnancy (Côté-Arsenault, 2007; Tsartara & Johnson, 2006; Woods-Giscombé et al., 2010), contrary to the increases evident across pregnancy in the current study and in the Blackmore et al. (2011) study. The differences in trajectory patterns could be related to the current study's use of a psychometric tool that evaluated free-floating anxiety (CCEI) versus other studies' use of tools that evaluated situation or pregnancy-specific anxiety (STAI, POQ, PAS). Alternately, the differences could be a result of the high percentage of mothers within the current study experiencing three or more stressful life events from mid-pregnancy to early postpartum (55.3%).

The fluctuation pattern of the clinical anxiety trajectory in the current study differed from those demonstrated by all other symptom trajectories. While every symptom trajectory showed decreasing mean values between 32 weeks' gestation and two months postpartum, the clinical anxiety trajectory showed continued increases between 32 weeks' gestation and 8 months postpartum with mean scores remaining above the regression line up to 61 months postpartum.

Similarities to the fluctuations demonstrated by the clinical anxiety symptom trajectory in the current study could not be found in the research literature. Future research that differentiates the influence of trait anxiety on the clinical anxiety trajectory from that of free-floating anxiety could reveal information that may be beneficial in determining effective avenues for assessment and treatment.

Early Factors Predictive of Elevated Symptom Trajectory Patterns

The strongest factors (most to least) predictive of long-term clinical depressive symptoms included history of severe depression, taking anti-depressants this pregnancy, and history of other psychiatric disorder. The strongest predictors of longitudinal sub-clinical and clinical anxiety symptoms included a history of other psychiatric problem, and a history of severe depression. Having a history of severe depression ($p<0.001$) was found to elevate the odds of long-term clinical depressive or clinical anxiety symptoms by almost five, sub-clinical anxiety symptoms by three, and sub-clinical depressive symptoms by two, compared to mothers who did not have the same history. A similar study found that a history of depression elevated the odds of longitudinal depressive and anxiety scores by over three times in women after a prenatal loss with a subsequent pregnancy and postpartum ($p<0.0001$) (Blackmore et al., 2011). Further, another study showed that depressive coping and anxious grieving after miscarriage was associated with elevated first trimester depressive and anxiety symptoms in subsequent pregnancy (Bergner et al., 2008). While treating depression (taking anti-depressants) during pregnancy elevated the odds of long-term clinical depressive symptoms by almost five ($p=0.015$) in the current study, so was the presence of depression in the third trimester of a pregnancy subsequent to stillbirth (> 18 weeks' gestation) found to be a risk factor for depression one year after birth ($p \leq 0.0005$) in another study (Hughes et al., 1999). A literature synthesis and meta-

analysis found that a history of depression, a history of other psychological distress, and depression or anxiety during pregnancy, among other factors, were significant risk factors predictive of postpartum depression in women regardless of a previous prenatal loss (O'Hara & Swain, 2009; Robertson et al., 2004).

The two strongest predictors (most to least) of longitudinal sub-clinical depressive symptoms included three or more stressful events between mid-pregnancy to two months postpartum, and perceived inadequate social support between childbirth and two months postpartum. This may suggest that therapies effective in transitioning individual perception, improving interpersonal functioning and distress tolerance, and supporting emotional regulation, such as cognitive or dialectical behavioral therapy and interpersonal psychotherapy, may be a beneficial preventative approach for women at risk. Contrary to the association found in the current study, a similar study did not find that perceived social support or maternal stress had a significant interaction on the relationship between miscarriage and probable depression from 30 weeks' gestation to one year postpartum, however these women rated their social support similar to women without miscarriage ($\bar{x}$ = 22.3, ±2.9) and the study did not measure stress specific to perinatal loss (Bicking-Kinsey et al., 2015). Alternately, a literature review and a meta-analysis found that low social support and stressful life events during pregnancy and early postpartum were significant risk factors predictive of postpartum depression in women who had no history of a previous prenatal loss (O'Hara & Swain, 2009; Robertson et al., 2004).

While the current study did not find a short interpregnancy interval (< 12 months) to be predictive of longitudinal depressive or anxiety symptoms, some studies found there was a significant association with depression, psychiatric symptoms, or pregnancy distress (Haghparast et al., 2016; Hughes et al., 1999) and some did not (Gravensteen et al, 2018; Hunfeld et al.,

1997). Studies that found an association interpreted their findings as potentially relating to anxious personality traits which may have motivated the short interpregnancy interval or as resulting from an interrupted, re-evoked or prolonged grieving process for the previous prenatal loss (Beutel et al., 1995; Blackmore et al., 2011; Hughes et al., 1999; Hunfeld et al., 1997; Lewis, 1979; Phipps, 1985-1986). In addition, unlike the current study, other studies found repeated pregnancy loss (two or more) (Blackmore et al., 2011; Fertl et al., 2008), and younger maternal age at birth (Woods-Giscombé et al., 2010) to be factors influencing longitudinal depressive and/or anxiety symptoms during subsequent pregnancy or postpartum. Further, other studies did not evaluate a history of abuse, history of abortion, attainment of a university degree, or maternal ethnicity as predictors of longitudinal depressive or anxiety trajectories in expectant and postpartum mothers affected by a prenatal loss, as the current study did.

Strengths and Limitations

The generalizability of the current study is strengthened by using data from a longitudinal population-based prospective pregnancy and birth cohort that spanned 20 years (ALPSAC) (Fraser et al., 2012). The ALSPAC study contained several time points from early pregnancy to 73 and 134 months postpartum during which symptoms were assessed using validated psychometric measurement tools. The sample sizes within the model solution for the trajectory classes were adequate to make significant interpretations. Further, ALSPAC contained data related to maternal demographics, pregnancy, prenatal loss, abuse, addiction and mental health history, stressful life events, medication, and social support which were analyzed for associations with sub-clinical and clinical trajectories of maternal mental health symptoms.

Despite these strengths, results should be interpreted with awareness of the following limitations. First, like most prospective population-based studies, ALSPAC experienced

substantial attrition from recruitment to study conclusion, a phenomenon that has shown to be associated with socioeconomic disadvantage and mental health issues and thus, may yield conservative estimates of true associations affecting generalizability of the findings (Bould et al., 2013; Boyd et al., 2013; Capron et al., 2015; Kingsbury et al., 2015). Second, shame or stigma may surround some variables and it is possible that mothers under-reported their history of abuse, history of abortion, or history of psychiatric problems. To validate the self-reports related to history and to strengthen the findings in the current study, assessments conducted by a health professional or self-reports based on responses shared by partners could have been used as well. Third, since mothers provided self-reports of previous prenatal loss, the current study's findings may be influenced by recall bias or a participant's lack of awareness related to missed miscarriages. Fourth, the variables selected for use in this study were limited to pregnancy and postpartum time periods specific to the ALSPAC dataset. As such, a prediction model to identify risk factors prior to a subsequent pregnancy could not be developed and thus, evaluated for predictive accuracy and cross-validated measures of fit (eg. AUC - Area under the curve). Opportunity for future research may include identifying risk factors evident prior to a subsequent pregnancy from which a clinical decision-making tool designed to determine women's risk for longitudinal elevated psychological distress may be developed. Future research may also focus on identifying predictors associated with symptom fluctuations within elevated depressive and anxiety trajectory patterns across several time points longitudinally.

Conclusion

To our knowledge, this is the first study to explore longitudinal trajectory patterns of depressive and anxiety symptoms in mothers affected by a previous prenatal loss from 18 weeks' gestation up to 134 months postpartum. As well, this is the first study to identify early factors

predictive of long-term sub-clinical and clinical symptoms. The trajectory patterns shown in this study reveal time points which mothers with sub-clinical or clinical depressive or anxiety symptoms found particularly challenging and the early predictors associated with women who have higher odds of experiencing long term sub-clinical or clinical symptoms. As such, psychosocial assessments may be conducted with women after prenatal loss to identify those with greater chances of experiencing long-term poor outcomes related to depression or anxiety and to continue monitoring symptoms during a subsequent pregnancy and after childbirth, specifically at times known to be challenging. Preliminary assessments may also be developed to gather valuable information to determine the most effective approach in promoting the emotional health of prenatal and postnatal women affected by prenatal loss.

The results of this study provide support for the policy initiatives outlined in the National Health Service's Perinatal Mental Health Care Pathways (NICE, 2018) and for the recommendations and practice points outlined in the Australian Clinical Practice Guidelines for Mental Health Care in the Perinatal Period (Austin et al., 2017). By incorporating current evidence on screening for psychological distress and identifying factors predictive of poor mental health outcomes in mothers affected by prenatal loss, transformative change concerning effective and accessible mental health care may be achieved through strategic vision and policy initiatives.

Supplementary Information

Conflict of Interest Statement

All authors confirm that there are no actual or potential financial or personal conflicts of interest, or other relationships with other people or organizations, within three years of beginning this study, that could inappropriately influence, or be perceived to influence, this work. All authors confirm that there is no financial interest or benefit arising from the direct applications of this research study.

Submission Declaration

All authors confirm that the work within this study has not been previously published and is not under consideration for publication elsewhere. All authors, including the responsible authority where this study was conducted, confirm that the work completed in this study has been approved for publication submission. The authors declare that if the work within this study is accepted for publication, it will not be published elsewhere in any form, without the written consent of the copyright holder.

Declaration of Interest

None.

Authors' Contributions

EMC, RG, MKM, AW and DK conceptualized and designed the study. EMC, MKM, AW and KSB managed the literature search and analyses. EMC, MKM and MA undertook the statistical analysis and EMC wrote the first draft and revised the manuscript to its final form. All authors contributed to the draft review and approved the final manuscript.

Role of the Funding Source

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Chapter 3 Effectiveness of Psychotherapeutic Interventions on Psychological Distress in Women who have Experienced Perinatal Loss: A Systematic Review Protocol.

Published Manuscript

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Abstract

Background: Perinatal loss is a traumatic and complex experience that contributes to negative maternal psychological states and adverse outcomes impacting fetal development, maternal-fetal/infant bonding, marital/partner relationships, and child cognitive, emotional, and behavioral development. These outcomes present preventable disease burden and financial liability to individuals, families, and the healthcare system. Psychological interventions have the potential to improve outcomes for women and their families after perinatal loss. A few studies have explored the effectiveness of individual psychotherapeutic interventions in reducing maternal psychological distress after perinatal loss; however, a systematic review to compare these interventions has not been conducted. The primary objective of this systematic review is to determine the effectiveness of psychotherapeutic intervention on psychological distress and perception, coping, and adjustment in women who have experienced perinatal loss. The secondary objective of this review is to examine the content and delivery methods of effective psychotherapeutic interventions.

Methods: We endeavor to search electronic databases (PsycINFO, MEDLINE, Embase, Cochrane Central Register of Controlled Trials (CENTRAL), Scopus, CINAHL, Social Work Abstracts, Family and Society Studies Worldwide, Family Studies Abstracts, Academic Search Premier), gray literature databases (Proquest Dissertation and Theses Global, Web of Science Conference Proceedings Citation Index, OAIster, Open-Grey, Canadian Electronic Library, Canadian Research Index), and relevant organizational websites and conduct forward and backward citation searches of included studies. Inclusion criteria will consider studies that (1) are randomized controlled trials (RCTs), quasiexperimental (e.g., before-after design), and observational (prospective cohort); (2) include women affected by perinatal loss accessing

psychotherapeutic intervention or support; and (3) evaluate a mental health or related outcome. Two authors will independently screen all citations, full-text articles, and abstract data. The study methodological quality (or bias) will be appraised using an appropriate tool. The primary outcome(s) will be measurements on the severity of depressive, anxiety, grief, and post-traumatic stress symptoms. Secondary outcomes will include measurements on difficulties in perception, coping, social, or dyadic adjustment. Conducting a narrative synthesis will identify relationships within study findings, and if appropriate, a random effects meta-analysis will be performed.

Discussion: This systematic review will summarize the effectiveness of psychological interventions, including their content and delivery method, in reducing psychological distress and improving outcomes for women affected by perinatal loss. The evidence generated from this review can inform researchers and policymakers in expanding on related research and developing customized interventions or programs.

Systematic Review Registration

PROSPERO CRD42019126456

Keywords

Systematic review, Protocol, Perinatal loss, Pregnancy loss, Psychotherapy, Psychological interventions, Therapy, Psychological distress, Adjustment, Coping

Background

Perinatal loss (PL) can be experienced as a devastating and psychologically distressing occurrence which studies have shown negatively impacts mental, emotional, and physical health across the lifespan (Beydoun & Saftlas, 2008; Campillo et al., 2017; Côté -Arsenault & Mahlangu, 1999; Kingston et al., 2012a; Toffol et al., 2013). Perinatal loss (PL), which includes prenatal loss (miscarriage or stillbirth) or neonatal death, may occur at any time between the point of conception to 28 days after the date of delivery (Barfield, 2011; Kersting & Wagner, 2012; Meredith et al., 2017; Wang et al., 2013). Canadian guidelines define miscarriage as the loss of a pregnancy before 20 weeks' gestation, stillbirth as death after 20 weeks' gestation with the fetus weighing over 500 g, and neonatal death as loss of an infant within 28 days after birth (Barfield; Kersting & Wagner; Meredith et al; Wang et al.). Definitions of miscarriage, stillbirth, and neonatal death may vary worldwide because of the lack of standardization.

Across Canada, the USA, and the UK, it is estimated that between 15 and 20% of clinically identified pregnancies result in miscarriage (Bennet et al., 2012; Campillo et al; Carter et al., 2007; Everett, 1997; Geller et al., 2010; Gold et al., 2007; Kersting et al., 2011b; Kersting et al., 2013; Khodakarami et al., 2017; Kingston et al., 2012a; Klein et al., 2012; Lee et al., 1996; National Library of Medicine, 2018; Robinson, 2011; Savitz et al., 2002; Séjourné et al., 2010; Smith, 1988). This estimate is higher for those who have previously lost a pregnancy (August et al., 2011), increasing to 75% for women 45 years of age and over (Robinson). One study suggested that the actual prevalence of miscarriage, including missed or undocumented miscarriages, represents 30 to 40% of all pregnancies each year (Michels & Tiu, 2007). These prevalence rates suggest there are many women who have experienced a unique type of loss that is surrounded by various forms of ambiguity (Boss, 1999; Frost et al., 2007; Lang et al., 2011),

rendering it particularly traumatizing and difficult to process (Frost et al.). Further, perinatal bereavement is considered a complex, emotional and distressed response that has shown to last an indeterminate length of time (Mills et al., 2014). Studies have found that perinatal loss (PL) has substantial association with expressions of psychological distress such as depression, anxiety, post-traumatic stress (PTS), eating disturbance, preoccupation with the lost fetus/infant, and sleeping disorders (Kersting & Wagner; Hughes & Riches, 2003; Hunter et al., 2017). Despite this association, there is insufficient evidence in the literature that describes and compares psychotherapeutic interventions effective in reducing psychological distress in women after perinatal loss (PL) (Murphy et al., 2012). Limitations such as these may reinforce women's reticence in seeking resources to care for their mental and emotional health (Brier, 2008; Nikčević et al., 2007) and health care professional's enduring exclusion of mental and emotional health assessment from standard perinatal care (Chew-Graham et al., 2008). However, there are some individual studies that have found psychotherapeutic interventions helpful with reducing psychological distress symptoms in women after perinatal loss (PL) (Johnson et al., 2016; Navidian et al., 2017; Simpson et al., 2015). This is especially true for women who are finding recovery from the PL experience excessively challenging (Bennett et al., 2012; Nakano et al., 2013; Neugebauer et al., 2006; Neugebauer et al., 2007). It is possible then that some psychotherapeutic interventions are more effective with improving psychological distress in women after PL, than others.

Psychotherapeutic Interventions

While little is known about interventions that are effective with improving psychological distress in women affected by perinatal loss (PL) (Murphy et al., 2012), when asked, most women indicated that they would prefer to be under the care of a therapist to help them cope

(Kong et al., 2010). As such, a specialized program or licensed therapist or registered psychologist knowledgeable in promoting mental health after PL would have the expertise to assist women in discussing their loss, help them to understand, and regulate their emotions while offering non-judgmental support and resources (Brier, 2008; Trepal et al., 2005).

In the literature, there are a few intervention studies that provide data on the effectiveness of cognitive behavioral therapy (CBT) (Bennett et al., 2012; Cardoso & Nardi, 2011; Kersting et al., 2011b; Kersting et al., 2013; Khodakarami et al., 2017; Nakano et al., 2013; Navidian & Saravani, 2018; Séjourné et al., 2010), interpersonal psychotherapy (IPT) (Johnson et al., 2016; Neugebauer et al., 2007; Özer, & Yüksel, 2016), bereavement counseling (Forrest et al., 1982; Simpson et al., 2015), grief therapy (Alves et al., 2012), and other psychological and supportive interventions or programs (Cohen et al., 2019; Kong et al., 2014; Lee et al., 1996). Despite this, a comprehensive comparison of these intervention studies does not exist. This systematic review will identify the psychotherapeutic intervention(s) with the strongest evidence to suggest superior efficacy in reducing psychological distress in women after PL and examine their content and method of delivery. With the knowledge generated, it is intended that the quality of psychotherapeutic services made available and accessible to women after PL will improve.

Methods

Objectives

The primary objective of this systematic review is to determine the effectiveness of psychotherapeutic intervention on psychological distress (depressive, anxiety, grief, post-traumatic stress symptoms) and perception, coping, and adjustment in women who have experienced perinatal loss. The secondary objective of this review is to examine the content

(structure, objectives, goals) and delivery methods (in-person, telephone, online, distance) of effective psychotherapeutic interventions.

Review Questions

To address the objectives of this systematic review, the following questions will be answered:

1. What is the effectiveness of psychotherapeutic intervention on psychological distress in women who have experienced PL in comparison with women who do not receive psychotherapeutic intervention?

2. What is the effectiveness of psychotherapeutic intervention on difficulties with perception, coping, and adjustment in women affected by PL in comparison with women who do not receive psychotherapeutic intervention?

3. What is the content and delivery method of the psychotherapeutic intervention that is associated with reducing psychological distress and improving perception, coping, and adjustment in women who have experienced PL?

Protocol and Registration

This protocol is being reported in accordance with the reporting guidance provided in the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocol (PRISMA-P) statement (Additional file 1) (Appendix B) (Moher et al., 2015). This review has been registered in the International Prospective Register of Systematic Reviews (PROSPERO) with registration number CRD42019126456. The proposed systematic review and meta-analysis will be reported in accordance with the reporting guidance provided in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009).

Eligibility Criteria

Criteria identifying studies that are eligible are outlined in PICOSS format (participants, interventions, comparators, outcomes, study designs, and setting) as described below (Polit & Beck, 2017).

Participants

Studies will be included if their participants are female, over 18 years of age, and have experienced any type of perinatal loss as a single or recurrent event. Perinatal loss, which includes prenatal loss (miscarriage or stillbirth) or neonatal death, may occur at any time between the point of conception to 28 days after the date of delivery. Miscarriage is defined as the loss of a pregnancy before 20 weeks' gestation, stillbirth as death after 20 weeks' gestation with the fetus weighing over 500 g, and neonatal death as loss of an infant within 28 days after birth (Barfield, 2011; Kersting & Wagner, 2012; Meredith et al., 2017; Wang et al., 2013). A recurrent perinatal loss will be defined as two or more losses occurring consecutively (Hogge et al., 2003). Studies with participants who are visiting health centers or specialized programs for their perinatal loss or receiving prenatal care for a pregnancy subsequent to a previous perinatal loss will be included. Studies with participants who have experienced an ectopic pregnancy or termination of pregnancy will be excluded.

Measurement

Primary and secondary outcomes may be evaluated using a validated and reliable psychometric measurement tool or a validated questionnaire. However, studies that do not use at least one validated psychometric measurement tool will be excluded.

Intervention

The intervention received may be a psychotherapeutic intervention that was facilitated through a specialized program, or by a registered psychologist, licensed therapist, or other trained and licensed professional credentialed to provide specific counseling. The intervention may include psychological counseling, psychotherapy, psychological support, and psychoeducation in sessions structured to specific objectives or goals (content), conducted individually or in groups, and facilitated in person, on the telephone, online, or via distance delivery (method of delivery).

Comparators

Studies with any type of comparator group will be included. The comparators may represent the group receiving usual care, standard care, routine care, or intervention, another psychological or other non-specific intervention or a group that has been waitlisted.

Outcomes

The primary outcomes of interest include measurements on the severity of depressive, anxiety, grief, and post-traumatic stress symptoms that will have been evaluated using validated psychometric measurement tools according to their own clinical cutoff points. High symptom severity identified on psychometric measurement tools may suggest clinical caseness but does not determine a diagnosis. The secondary outcomes of interest include measurements on difficulties in perception, coping, social, or dyadic adjustment. Difficulties in perception, coping, social, and dyadic adjustment are defined within the parameters of the psychometric measurement tool that is being used to evaluate each dimension.

Study Design

Based on a preliminary scoping search, experimental and quasi-experimental studies are primarily expected, findings from which will be incorporated to address the review questions. Research focused on providing data related to the primary and secondary outcomes of this systematic review may include randomized controlled trials (including pilot randomized controlled trials), quasi-experimental studies (e.g., non/equivalent control group design, single group, pre-test/post-test, or before-after design) and observational prospective cohort studies.

Setting

Eligible literature will not be limited by specific setting or geographical location.

Search Strategy

A search strategy was developed and revised by a university-based health librarian (KAH) and the primary author (EMC). The search was developed in PsycINFO and piloted to ensure that all seed studies were retrieved. The PsycINFO search was then translated for each identified database, with subject headings responsive to the database vocabulary, and keywords constant. The databases that were searched from their inception onwards within disciplinary databases included PsycINFO, MEDLINE, Embase, Cochrane Central Register of Controlled Trials (CENTRAL), CINAHL, Social Work Abstracts, Family and Society Studies Worldwide, and Family Studies Abstracts and within interdisciplinary databases including Scopus and Academic Search Premier (Additional file 2) (Appendix C). Database searches will be updated prior to submission of the final publication to ensure all new studies are captured. Gray literature will be searched by the primary author within databases including Proquest Dissertation and Theses Global, Web of Science Conference Proceedings Citation Index, OAIster, Open-Grey, Canadian Electronic Library, and Canadian Research Index. Further, eligible studies will be

searched on organizational websites such as International MARCE Society for Perinatal Mental Health, Pregnancy and Infant Loss Network (PAIL), Pregnancy After Loss Support (PALS), WHO Partnership for Maternal, Newborn and Child Health, Pregnancy Loss and Infant Death Alliance (PLIDA), International Stillbirth Alliance (ISA), and Canadian Association of Perinatal and Women's Health Nurses (CAPWHN).

The search strategy will include literature that is not limited by language, publication year, publication status, or methodological quality. Articles retrieved through the search strategy that are not in English will be excluded during the study selection process. Qualitative studies will be excluded, as will other publication types such as books, book chapters, discussion papers, editorials, commentaries, letters, abstracts, posters, reviews, guidelines, and case studies. From the included full-text articles, backward and forward citation searches will be conducted to create a final list of articles that meet the criteria.

Data Collection

Data Management

EndNote X8 will be utilized to manage articles by removing duplicates, categorizing studies, and retrieving and storing full-text sources.

Study Selection

The Microsoft Excel spreadsheet application will be used to facilitate organization of information throughout the study selection process. There will be three reviewers involved in the process, the author will be the primary reviewer (EMC), a fellow PhD candidate will be the secondary reviewer (KSB), and the supervisor of the first two reviewers will be the third reviewer (DEK). Initially, a training and calibration exercise to pilot the screening tool using the inclusion and exclusion criteria on approximately 30 titles and abstracts will be conducted with

revisions made to the tool, as necessary. The titles and abstracts of the list of articles (level 1) will be screened independently by the primary and secondary reviewers with discrepancies resolved by the third reviewer. The articles selected based on their title and/or abstract will be retrieved in full text (level 2) and screened independently by the same two reviewers with discrepancies resolved by the third reviewer. The PRISMA flow diagram will be used to document the study selection process.

Data Extraction

Data will be extracted from full-text articles using a data extraction template developed for the randomized controlled trial (RCT) study design and the non-randomized study design using Microsoft Excel. These templates will be customized to capture additional data specific to the intent of the review questions. A calibration exercise will be conducted to pilot the customized templates with five percent of included studies, and revisions will be made as necessary. The process of data extraction will begin with the primary reviewer (EMC) extracting and the secondary reviewer (KSB) verifying the accuracy of the data extracted. Discrepancies will be discussed, and if there is no consensus between the first two reviewers, consultation with the third reviewer (DEK) will provide resolution. To ensure comprehensive data is attained during data extraction, intervention protocols will be accessed. Table 3.1 outlines the data items that will be extracted from full-text articles.

Table 3.1: Data Items to be Extracted from Included Studies

Category	**Data to be extracted**
Study characteristics	First author, year, country, study, objective, and study design
Recruitment	Recruitment strategy, sample size, group assignment: unit (individual, group, community), method (non/randomization), and bias minimization
Participant details	Eligibility criteria, demographics, mental illness history/diagnosis, perinatal loss, (definition, type, time since loss, previous/repeated loss), pregnancy status, participation, and attrition
Measurement	Tool used, timing and frequency of assessments, method and setting of data collection, data collectors, (who, training), confounders, and reliability/validity estimate for measurement tool
Intervention characteristics	Type, unit (individual, group), content of psychotherapeutic intervention (structure, objectives, goals), facilitator and credentials, delivery method (in-person, phone, online, distance), setting, timing of intervention initiation, number, frequency, length and duration of intervention, adherence (activities to enhance adherence, assessment of adherence or fidelity), materials (physical or information), tailoring, modifications (unplanned), and comparison group intervention
Outcomes	Duration and severity of depressive, anxiety, grief, post-traumatic stress symptoms, changes in perception of support and care, coping, and adjustment

Assessment of Methodological Quality and Risk of Bias

Methodological quality and risk of bias will be assessed for each study individually by the primary (EMC) and secondary (KSB) reviewers with discrepancies resolved by the third reviewer (DEK). For the randomized studies included, the Cochrane Risk of Bias assessment tools for RCTs (RoB2) will be used to assess for bias created from the process of randomization, assignment and adherence to intended interventions, missing outcome data, outcome

measurement, and selection of reported results (Sterne et al., 2019). The RoB2 ratings within each domain will be classified as low risk, high risk, and some concerns (Sterne et al., 2019). For the non-randomized studies included, the Risk of Bias in Non-Randomised Studies of Interventions (ROBINS-1) will be used to assess bias due to confounding, selection of participants, classification of interventions, deviations from intended interventions, missing data, measurement of outcomes, selection of the reported result, and overall bias (Sterne et al., 2016). The ROBINS-1 ratings within each domain will be classified as low risk, moderate risk, serious risk, critical risk, and no information (Sterne et al., 2016). Further, an assessment of intervention fidelity will be added to the RoB2 for RCT's "other" category (Sterne et al., 2019) and to the ROBINS-I's "deviations from intended interventions" category (Sterne et al., 2016).

Data Synthesis and Analysis

Synthesis of the extracted data will be conducted in accordance with the York's Centre for Reviews and Dissemination (CRD) guidelines (Centre for Reviews and Dissemination, 2008). A narrative synthesis will be used to aggregate studies by the validated measurement tool used and/or intervention type received to compare relationships within the data. The narrative synthesis process is intended to synthesize findings from the included studies, describe patterns within the studies, explore relationships within the results, examine factors impacting intervention effectiveness and effects, and assess robustness and generalizability (Popay et al., 2006).

Missing Data

In the event there is missing data, an attempt to contact authors of the studies will be made. In addition, the attrition rates for each included study will be noted or calculated. If missing data is not obtained or if a study's attrition rates are high, imputation of missing values

will be performed. A sensitivity analysis will then be conducted by removing studies individually to determine the impact that each included study has on the overall intervention effect.

Assessment of Heterogeneity

Since clinical and epidemiological heterogeneity is expected a priori, meta-analyses will be conducted using the random effects model where appropriate. The random effects model assumes the treatment effects follow a normal distribution, considering both within-study and between-study variation (Higgins et al., 2019). Forest plots will be used to visualize pooled estimates and the extent of heterogeneity among studies. We will quantify statistical heterogeneity by estimating the variance between studies using the I^2 statistic. The I^2 statistic is the proportion of variation in prevalence estimates that is due to genuine variation in prevalence rather than sampling (random) error (Higgins et al., 2019). The I^2 statistic ranges between 0 and 100% (with values of 0–25% and 75–100% taken to indicate low and considerable heterogeneity, respectively) (Higgins et al., 2003). We will also report Tau2 and Cochran Q test with a P value of < 0.05 considered statistically significant (heterogeneity). Further, if a small number of studies limit the information available to adequately apply the random effects model, a fixed effect model or a Bayesian approach will be appropriate.

Assessment of Meta-Bias

If there are ten or more appropriate studies in the meta-analysis, meta-bias (reporting or publication) will be assessed by visualizing the funnel plot for each outcome which will be created from each study's effect estimate and its study size (Egger et al., 1997). Conducting Egger's test of the intercept will quantify the funnel plot's asymmetry (Egger et al., 1997).

Analysis of Subgroups

With enough information from the included studies, a subgroup analysis will be conducted. The subgroup analysis will consider details related to intervention (type, content, facilitator, delivery method, setting, timing, frequency, length, duration), perinatal loss (type, previous losses), participant (present and past psychiatric condition, pregnancy status), and study design (RCT, quasi-experimental).

Confidence in Cumulative Evidence

The Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach (Schünemann et al., 2013), as recommended in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins et al., 2019), will be used to assess the quality of the evidence for each outcome related to psychological distress, perception, coping, and adjustment. The intention in using GRADE is to increase confidence in the review's cumulative findings which may be used to guide research in the future. The GRADE includes assessments on study design and quality, and consistency and directness and may be rated as high, moderate, low, and very low (Schünemann et al., 2013). The factors that may downgrade the quality of the evidence include study quality limitations, study design, risk of bias, inconsistency, indirectness (not generalizable), imprecision (sparse data), and publication bias (Schünemann et al., 2013). The factors assessed that may upgrade the quality of the evidence include large magnitude of effects, dose-response effect, and effect of all plausible factors (Schünemann et al., 2013; Ryan & Hill, 2016).

Discussion

This protocol outlines the strategy that will be used to complete a systematic review and meta-analysis on the effectiveness of psychotherapeutic intervention on psychological distress,

perception, coping, and adjustment in women who have experienced PL. The content and delivery method associated with effective psychotherapeutic interventions will be identified as well.

While there are a few individual studies that provide data related to the effectiveness of specific psychotherapeutic interventions on women affected by PL (Johnson et al., 2016; Navidian et al., 2017; Simpson et al., 2015), there is no evidence in the literature of a comprehensive comparison of these intervention studies. The knowledge generated from this review will enhance existing evidence and may be used to develop new psychological intervention programs or to refine existing psychotherapy in effort to improve the quality of the services accessible to women after PL. This knowledge is especially important for women residing in medium- and low resource settings, where access to treatment is likely to be significantly lower than in high-resource settings. With an improvement in relevant services, women will experience improved opportunity to recover after PL, reduced psychological distress, and enhanced resilience. To the best of the author's knowledge, this will be the first systematic review that overtly and fully intends to generate evidence that can inform researchers and policy makers in expanding on related research and developing tailored interventions or programs that will improve outcomes for women affected by PL and their families.

Supplementary Information

Supplementary information accompanies this paper at https://doi.org/10. 1186/s13643-020-01387-6.

Appendices

Appendix B. PRISMA-P CHECKLIST: The Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols. Completed PRISMA-P checklist specific to this protocol.

Appendix C. FINAL SEARCH STRATEGY 2019. Completed search strategy corresponding with this protocol.

Abbreviations

CENTRAL: Cochrane Central Register of Controlled Trials; RCT: Randomized controlled trial; PROSPERO: International Prospective Register of Systematic Reviews; PL: Perinatal loss; PTS: Post-traumatic stress; CBT: Cognitive behavioral therapy; IPT: Interpersonal psychotherapy; PRISMA-P: Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta- Analyses; PICOSS: Participants, interventions, comparators, outcomes, study designs, setting; PAIL: Pregnancy and Infant Loss Network; PALS: Pregnancy After Loss Support; WHO: World Health Organization; PLIDA: Pregnancy Loss and Infant Death Alliance; ISA: International Stillbirth Alliance; CAPWHN: Canadian Association of Perinatal and Women's Health Nurses; RoB2: Cochrane Risk of Bias assessment for RCTs; ROBINS-1: Risk of Bias in Non-Randomized Studies of Interventions; CRD: York's Centre for Reviews and Dissemination; GRADE: The Grading of Recommendations, Assessment, Development and Evaluation

Acknowledgements

Moving forward, EMC, KSB, and DEK will be involved in screening and data extraction.

Amendments

Should amendments between the protocol and the systematic review be required, a concise explanation in the methods sections of the final review will be provided and a revision in PROSPERO will be completed.

Authors' Contributions

EMC and DEK conceived and designed the study. EMC, DEK, and KAH developed the study methods and identified the inclusion/exclusion criteria. EMC and KAH created and finalized the search terms. KAH completed the searches in all databases, combined the results, removed the duplicates, exported the results to EndNote X8, and inserted preliminary data in the PRISMA flow diagram. EMC and KSB will pilot all forms; review all titles, abstracts, and full-text articles; select studies to include, and evaluate their methodological quality. EMC will extract data with a review for accuracy conducted by KSB. EMC drafted this protocol manuscript. All authors reviewed, provided recommendations, and approved the final protocol manuscript.

Funding

This systematic review has been designed as the second phase of a three-phase doctoral study at the University of Calgary. The corresponding author is the recipient of the Eyes High Doctoral Recruitment Scholarship.

Availability of Data and Materials

All results acquired within this review will be available by request through the corresponding author. Results may include database searches, search results, quality appraisal, and data extraction results from included studies.

Ethics Approval and Consent to Participate

This study will be established on data from published studies which declares no requirement for ethics approval.

Consent for Publication

Not applicable

Competing Interests

The authors declare that they have no competing interests.

Chapter 4 Psychotherapeutic Interventions to Decrease Psychological Distress in Women after Perinatal Loss: A Systematic Review and Meta-Analysis.

Manuscript will be submitted to *Systematic Reviews.*

Charrois, E. M., Bright, K. S., Hayden, K. A., Giallo, R., Dimitropoulos, G. & Kingston, D. (Unpublished manuscript). Psychotherapeutic interventions to decrease psychological distress in women after perinatal loss: A systematic review and meta-analysis.

Foreword

This systematic review and meta-analysis has deviated from the original protocol (Charrois et al., 2020) as follows:

1) the Effective Public Health Practice Project (EPHPP) quality assessment tool was utilized rather than the Cochrane Risk of Bias assessment tool for RCTs (RoB2) and the Risk of Bias in Non-Randomised Studies of Interventions (ROBINS-1) for quasi-experimental studies. Due to it's recent use by the first two authors in another review, the EPHPP tool was familiar and offered greater ease with use over the RoB2 and ROBINS-1 tools.

2) the effectiveness of psychotherapeutic intervention on perception, coping, social or dyadic adjustment and relationship dynamics in women after PL were not evaluated due to the lack of sufficient data across studies.

3) dissertations, conference proceedings, and books were not considered eligible to due to this study's inclusion criteria being limited to RCT's and quasi-experimental studies. As a result, databases including Proquest Dissertation and Theses Global, Web of Science Conference Proceedings Citation Index, Open-Grey, and Canadian Electronic Library were not searched.

Abstract

Background: Given that psychological distress is highest immediately after a perinatal loss and that most women desire access to appropriate follow-up care, developing effective interventions or programs that are initiated early after loss is of great importance. This is the first systematic review and meta-analysis with an objective to evaluate the effectiveness of psychotherapeutic interventions and compare the content and delivery methods of interventions associated with greatest reductions in psychological distress in women after perinatal loss.

Methods: Ten databases were searched from inception to January 30, 2019. Of the 2,427 records screened, 12 studies were included. The search was updated December 17, 2020. Of the 425 records screened, one additional study was included. Thirteen studies were included in the review and 10 were included in the meta-analysis. All studies were critically appraised using a quality assessment tool.

Results: Based on reports across studies from 1,504 women affected by perinatal loss, the most effective psychotherapeutic interventions included (a) a supportive psychological counselling program and a CBT-based counselling program in reducing anxiety and depressive symptoms; (b) a supportive psychological counselling program and CBT-based grief and bereavement counselling in grief symptoms; (c) CBT-based counselling and CBT-based grief counselling in PTS symptoms. Effective interventions were initiated within the week of the loss, delivered across multiple sessions, facilitated weekly or more frequently, hosted in the community, and provided preventively. Content themes of effective interventions included (a) establishing safety; (b) acknowledging the loss; (c) exploring the impact of loss; (d) processing emotions surrounding the loss; (e) becoming informed and effective coping strategies; (f) integrating the loss into life; (g) planning for the future.

Limitations: A small number of studies (k=10) were used and conducting a meta-bias was not possible. Studies published in English were included despite their methodologic quality and may diminish quality of results and generalizability.

Conclusion: Supportive psychological counselling and CBT-based counselling interventions and programs were most effective in reducing depressive, anxiety, grief, and PTS symptoms in women affected by perinatal loss. The themes identified within effective interventions are consistent with contemporary trauma recovery and meaning reconstruction concepts.

Systematic Review Registration: PROSPERO CRD42019126456

Keywords

Systematic review, Meta-analysis, Perinatal loss, Psychotherapeutic intervention, Psychological distress, Depression, Anxiety, Grief, Post-traumatic stress

Background

Perinatal loss (PL) is often an emotionally distressing experience for women and their partners and families, rendering everyday coping a significant challenge. Perinatal loss (PL) can occur from conception and up to a month after delivery and is categorized as miscarriage, stillbirth or neonatal death depending on the timing of the loss (Barfield, 2016; Kersting & Wagner, 2012; Wang et al., 2013). While there is no global standardized definition, Canadian guidelines define the loss of pregnancy before 20 weeks gestation as miscarriage, fetal death after 20 weeks' gestation as stillbirth, and infant death within the first 28 days after birth as neonatal death (Barfield; Kersting & Wagner; Meredith et al., 2017; Wang et al.).

Miscarriage is the most common type of perinatal loss (PL), affecting 15 to 20% of clinically recognized pregnancies in Canada, USA, and the UK (Bennett et al., 2012; Campillo et al., 2017; Carter et al., 2007; Everett, 1997; Geller et al., 2010; Gold et al., 2007; Kersting et al., 2011a, Kersting et al., 2013; Kersting et al., 2011b; Kersting & Wagner, 2012; Khodakarami et al., 2017; Kingston et al., 2012a; Klein et al., 2012; Lee et al, 1996; Robinson, 2011; Savitz et al., 2002; Séjourné et al., 2010b; Smith, 1988). When considering pregnancies that have not been clinically recognized, annual estimates increase to 40% (Michels & Tiu, 2007). A recent systematic review (Farren et al., 2018) showed that (a) 41% of women experienced clinical anxiety immediately after miscarriage (Prettyman et al., 1994); (b) between 22% (Prettyman et al.) and 36% (Neugebauer et al., 1992a; 1992b) experienced clinical depression after 2 weeks; (c) between 25% and 45% of women experienced clinical post-traumatic stress disorder (PTSD) after one to three months (Engelhard et al., 2001; Farren et al., 2016). Although psychological distress decreased across the first year after the prenatal loss (Farren et al., 2018), 20% of women continued to experience severe symptoms of anxiety, depression, and post-traumatic stress (PTS)

at one year after loss (Bennett et al., Boyle et al., 1996). For some women, the severity of psychological distress persisted for up to 3 years after loss (Campbell-Jackson & Horsch, 2014) with research estimating that these women have a 29% lifetime risk for post-traumatic stress disorder (PTSD) (Turton et al., 2001). Hunter et al.'s (2017) meta-analysis demonstrated increased depression and anxiety in a subsequent pregnancy. Further, Charrois et al. (Unpublished results) (Chapter 2) demonstrated that up to 6-10 years after the delivery of a subsequent child, approximately one in three women experience sub-clinical levels of anxiety (30.9%) and depressive symptoms (37.8%), and around one in ten experience clinical levels of anxiety (11.4%) and depressive symptoms (12.8%).

The influence of poor maternal psychological health on obstetrical complications, maternal fetal/infant attachment, and child cognitive and physical development is well-established (Armstrong et al., 2009; Gaudet et al., 2010), and exacerbates the burden on healthcare systems and society (Heazell et al., 2016). Given that maternal psychological distress is highest immediately after a perinatal loss (PL) and the majority (90%) of these women desire access to appropriate follow-up care (Kong et al., 2014; Nikčević et al., 1998), developing effective interventions or programs that are initiated early after loss is of great importance. As such, evaluating the evidence for psychotherapeutic interventions that aim to improve women's psychological distress related to perinatal loss (PL) is urgently needed.

To date, three systematic reviews evaluating the effectiveness of a range of psychotherapeutic interventions on psychological distress after perinatal loss (PL) have been conducted. Murphy, Lipp & Powles' (2012) systematic review of six studies representing 1,001 participants assessed the effectiveness of a counselling program (eg. Couple's Miscarriage Healing Project) (Swanson et al., 2009) or counselling sessions (eg. psychological debriefing)

(Lee et al., 1996) in women after miscarriage. They concluded that a single counselling session did not reduce anxiety, depression, grief, avoidance, or self-blame, and that multiple counselling sessions showed mixed results. Shaoshua & Shorey's (2021) systematic review and meta-analysis of 17 studies representing 2,065 participants examined the effect of psychosocial interventions facilitated by medical or allied health professionals on parents, most of whom were women, within 2 years after PL, reporting a significant association with improved anxiety, depression, and grief immediately and at the 6-week follow-up. However, they also noted that two studies found no significant association between multi-session, couple-based counselling and improved anxiety and depression or grief (Shaohua & Shorey). In addition, a systematic review that evaluated the effect of psychotherapeutic or support interventions on decreasing stress in pregnant women subsequent to miscarriage found no studies that met their inclusion criteria (Campillo et al., 2017).

The limited number of research studies eligible for inclusion in these systematic reviews (Campillo et al., 2017; Murphy et al., 2012; Shaohua & Shorey, 2021) emphasizes the need for additional research and intervention studies related to non-pregnant and pregnant women after perinatal loss. To date, there is no systematic review or meta-analysis that examined the effect of psychotherapeutic intervention on women's psychological distress after prenatal loss and compared the content and delivery methods of the interventions that decreased distress. This is the first systematic review and meta-analysis to include experimental and quasi-experimental studies that examined the effect of psychotherapeutic interventions, facilitated by a registered psychologist, licensed therapist, or other professional credentialled to provide specific counselling or through a specialized program, on women's psychological distress after prenatal loss or neonatal death. The findings from this analysis provide information necessary for

clinicians and policymakers to improve the services and programs accessible to women after perinatal loss.

The primary aim of this systematic review and meta-analysis is to analyse and synthesize research evaluating the effectiveness of psychotherapeutic interventions to treat or decrease psychological distress in women after prenatal loss or neonatal death. The guiding research question for the primary aim is, 'what is the effectiveness of psychotherapeutic intervention on psychological distress in women who have experienced PL in comparison with women who did not receive psychotherapeutic intervention?' The secondary aim is to outline delivery methods of and synthesize themes within the content of effective psychotherapeutic interventions. The guiding research question for the secondary aim is, 'what is the content and delivery method of the interventions associated with decreasing distress?'

Methods

Registration and Protocol

This systematic review has been registered with the International Prospective Register of Systematic Reviews (PROSPERO) (Charrois et al., 2020) and was reported in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) statement (Moher et al., 2015) The protocol for this review outlines the parameters that were used to guide the search strategy, study selection, data extraction and data analysis (Charrois et al.). This systematic review and meta-analysis is reported in accordance with the reporting guidance provided in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Appendix D) (Page et al., 2020).

Search Strategy

Relevant publications were identified by performing a systematic search of the electronic databases provided by Ovid including APA PsycINFO, MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily, Embase, and Cochrane Central Register of Controlled Trials (CCRT); provided by Ebsco including CINAHL Plus with Full Text, Social Work Abstracts, Family and Society Studies Worldwide, Family Studies Abstracts, and Academic Search Complete; and Scopus. The database parameters were set to search from database inception to January 30, 2019 (Appendix C). The same database parameters were rerun on December 17, 2020, to update the search results (Appendix E). The search strategy included a combination of terms, including both keywords and controlled vocabulary, related to perinatal loss type (eg. miscarriage, stillbirth) and intervention type (counseling, psychotherapy). Searches for gray literature were conducted on organizational internet sites relevant to perinatal loss and in the OAIster, and Canadian Research Index databases. Databases including Proquest Dissertation and Theses Global, Web of Science Conference Proceedings Citation Index, Open-Grey, and Canadian Electronic Library were not searched as identified in the protocol (Charrois et al., 2020), due to the inclusion criteria related to study design (eg. RCT's and quasi-experimental studies) influencing eligible resources. In addition, the search strategy was enhanced by backward and forward citation searches from the full-text articles that met criteria.

Inclusion Criteria

Research studies that evaluated the effectiveness of a psychotherapeutic intervention in women affected by PL, as described in the published protocol (Charrois et al., 2020), were included. The criteria that identified studies eligible for this systematic review and meta-analysis

are described according to participants, measurement, intervention, comparators, outcomes, study design and setting.

Participants

Female participants (≥ 18 years of age) who experienced any type of PL (miscarriage, stillbirth, or neonatal death) as a single or recurrent event were included. Miscarriage is the loss of pregnancy before 20 weeks gestation, stillbirth is fetal death after 20 weeks' gestation, and neonatal death is infant death within the first 28 days after birth (Barfield, 2016; Kersting & Wagner, 2012; Meredith et al., 2017; Wang et al., 2013). Women who had experienced an ectopic pregnancy, induced abortion, termination of pregnancy for medical reasons, or lost an infant to SIDS were excluded.

Measurement Tools

Research studies that used a validated and reliable psychometric measurement tool or validated questionnaire to evaluate psychological distress were included. Because psychometric measurement tools were used to assess symptom severity, high scores indicated high symptomology but did not confirm a clinical diagnosis.

Interventions

Research studies that presented psychotherapeutic interventions that were facilitated by a registered psychologist, licensed therapist, or other professional credentialled to provide specific counselling (eg. CBT-based, grief or supportive psychotherapeutic intervention) or facilitated through a specialized program were included. Interventions structured to specific objectives that were delivered individually or in groups and facilitated in-person, on the telephone, or via home-based self-help material were also included.

Comparators

Research studies that had a comparator group of participants that were receiving treatment as usual (routine prenatal/postnatal care/routine hospital care), deferred intervention, or no intervention were included.

Outcomes

Research studies that measured psychological distress including depression, anxiety, grief, and post-traumatic stress were included in the analysis. Despite having a previously identified objective in the protocol (Charrois et al., 2020), determining the effectiveness of psychotherapeutic intervention on difficulties with perception, coping, and adjustment in women after PL, were not evaluated due to the lack of sufficient data across studies.

Study Design

Studies with experimental (RCT and pilot RCT) and quasi-experimental (pretest/post-test, post-test only) research designs were included. Reviews (umbrella, systematic, integrative, literature), meta-analyses, case studies and qualitative research studies were excluded.

Setting

Research studies were not excluded based on their geographical location however, non-English publications were excluded during the selection process.

Study Selection

Initially, database results were uploaded to EndNote 8 and manually deduplicated, after which the first two authors (EMC and KSB) independently completed a calibration exercise on 30 records in accordance with the inclusion criteria. There was 92% inter-rater agreement rate in the calibration exercise prior to the study selection process. Subsequent to the calibration, both authors independently screened records to determine admissibility in two phases using an Excel

spreadsheet. The first phase required assessing the titles and abstracts to identify the records that met inclusion criteria. The second phase required assessing each provisionally included study in full text to ensure it continued to meet criteria to be included in the data extraction phase. Agreement between the first and second author in the first phase was 95.3% and in the second phase was 90.6%. While consultation with a third reviewer (DEK) was not necessary, this plan to resolve disagreement between the two authors was established prior to the study selection process. The same process was followed by the same two reviewers in selecting studies from the updated database search, except that deduplication and screening were conducted through Covidence.

Quality Assessment

The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool was used to evaluate the methodologic quality of the included studies. Despite the previous indication in the protocol to measure methodologic quality using the Cochrane Risk of Bias assessment tool for RCTs (RoB2) and the Risk of Bias in Non-Randomised Studies of Interventions (ROBINS-1) for quasi-experimental studies (Charrois et al., 2020), the first two authors (EMC and KSB) decided to use the EPHPP tool. The factors motivating this selection included its recent use by the authors in another review, their familiarity with the tool and the greater ease of use it offered over the RoB2 and ROBINS-1 tools. As such, EMC and KSB independently evaluated the quality of all studies using the EPHPP tool and inter-rater deviations were resolved through discussion.

Data Extraction

The first two authors (EMC and KSB) independently extracted data according to pre-determined specifications after a calibration exercise was completed (Appendix F).

Statistical Analysis and Synthesis

Study outcomes that were reported as or could be computed into continuous statistical values (mean, standard deviation) qualified for use in the meta-analysis and studies with incomplete data or other statistical values were narratively integrated.

The Comprehensive Review Manager meta-analysis software (version 5.4.1) was used to calculate the pooled effect sizes individually for depression, anxiety, grief, and post-traumatic stress. As clinical and epidemiological heterogeneity was expected, the random effects model was used in all analyses. Continuous data, such as mean and standard deviation with 95% confidence intervals (CI), were entered in RevMan and an inverse variance statistical method and standardized mean difference was selected. The findings were presented in forest plots as relative pooled effect size estimates (Hedges' g) to identify differences between intervention and comparison groups relative to the time lapse after prenatal loss and follow-up after specific psychotherapeutic intervention (eg. CBT-based or supportive psychological intervention, grief counselling). A larger effect size (eg. ≥ 0.8) indicated a greater association with the psychotherapeutic intervention. The I^2 statistic with 95% CI was calculated to determine heterogeneity across studies with values of 0-40% and 75-100% identifying unimportant and considerable heterogeneity, respectively (Higgins et al., 2019).

Comparisons of follow-up timepoints after specific psychotherapeutic intervention included the first post-intervention evaluation and when the data was available, the second post-intervention evaluation. Time lapse comparisons relative to prenatal loss were divided across two periods: eight weeks or earlier and between eight and 16 weeks. If considerable heterogeneity was present within these comparisons, a sensitivity and subgroup analyses determined whether differences were related to individual studies or variables relevant to certain groupings. Analyses

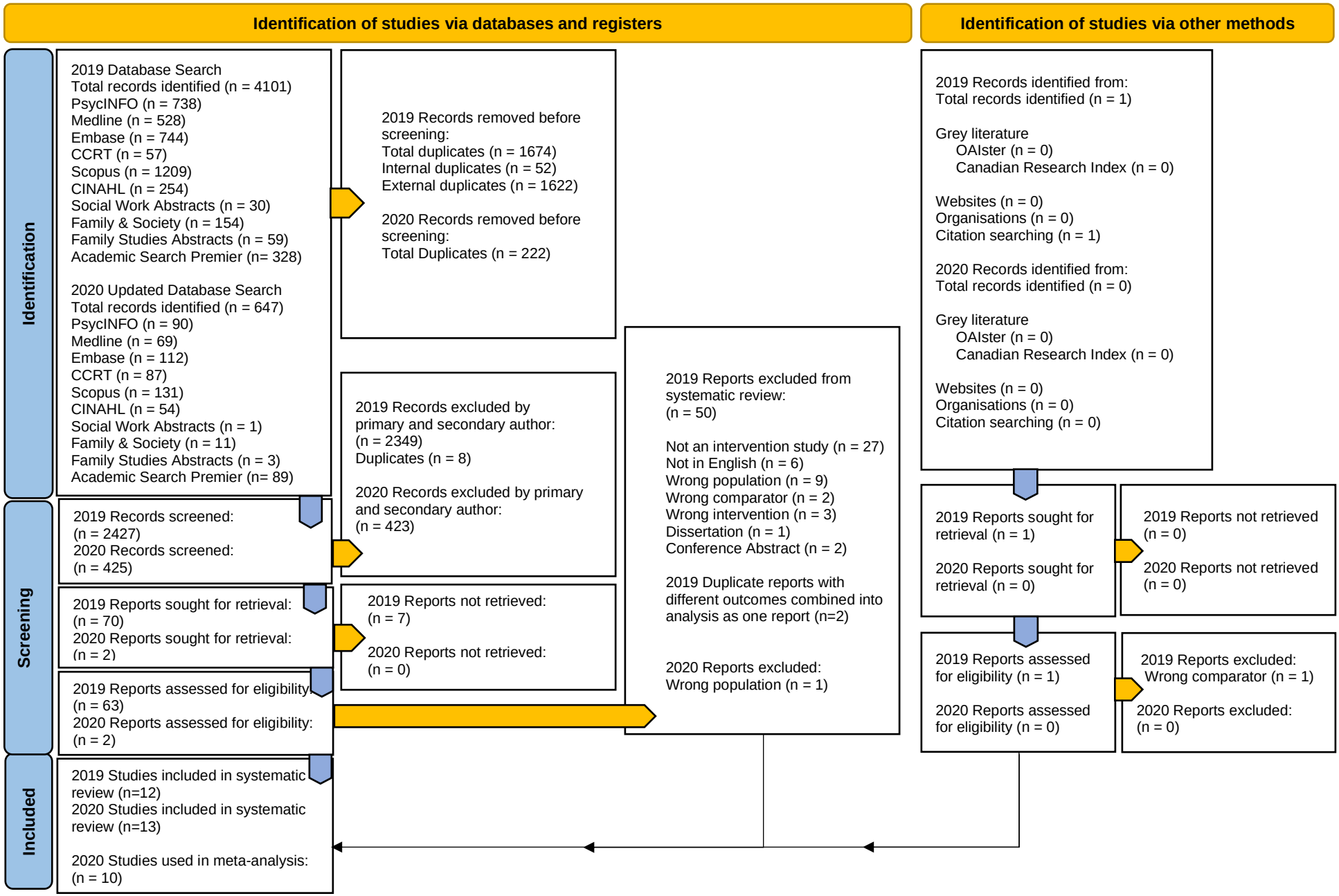
were conducted with groupings on the number of sessions (one vs. 2-4 vs. 5-8), timing of intervention commencement (< 1 week after prenatal loss vs. ≥ 2 weeks after prenatal loss) and the method (specialized program vs. non-specialized program), mode (in-person vs. in-person/telephone), and format (individual vs. group) of intervention implementation to determine their effect on psychological outcomes. In studies with longitudinal data, results from the first evaluation after intervention were used in subgroup analyses and comparisons were conducted with a minimum of two studies. A meta-bias (reporting or publication bias) was not performed as funnel plot symmetry would not be informative due to the limited number of studies within each meta-analytical and subgroup comparison (n < 10) (Higgins et al., 2019).

Results

Selection of Included Studies

The PRISMA diagram (Figure 4.1) presents the study selection and inclusion process. The original database search was conducted in January 2019 and updated in December 2020. Initially, 2,427 record titles and abstracts were screened for inclusion, of which 70 reports met criteria and were sought for retrieval. Seven reports were irretrievable and 63 full-text reports were assessed for eligibility. Of these, 50 were excluded for different reasons and two were considered a single report due to study duplicity evaluating separate outcomes (PTS and grief) (Navidian et al., 2017; Navidian & Saravani, 2018). As such, 12 studies were included in the systematic review. In the updated search, 425 record titles and abstracts were screened, 2 reports were retrieved, and one was included. In the first citation search, one report was assessed for eligibility and excluded. In summary, 13 studies provided information for the systematic review and 10 of those studies, provided data for the meta-analysis.

Figure 4.1: PRISMA Diagram (Page et al., 2020)



Characteristics of Included Studies

Table 4.1 presents the characteristics of included studies. Depressive symptoms were assessed in 10 studies (Forrest et al., 1982; Khodakarami et al., 2017; Kong et al., 2014; Lee at al., 1996; Neugebauer et al., 2006; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015; Swanson et al., 2009) anxiety in eight studies (Azogh et al., 2018; Forrest et al., Khodakarami et al., Lee et al., Nikčević et al., Palas Karaca & Oskay, Séjourné et al. Simpson et al.), grief in six studies (Lake et al., 1987; Navidian & Saravani, 2018; Nikčević et al., Palas Karaca & Oskay, Simpson et al., Swanson et al.), and PTS in three studies (Lee et al., Navidian et al., 2017; Séjourné et al.). Notably, depressive and anxiety symptoms across studies were most frequently evaluated using the Hospital Anxiety and Depression Scale (HADS) (Khodakarami et al., Lee et al., Nikčević et al., Séjourné et al.). Dissimilar scales were used across studies to measure grief symptoms (Lake et al., Navidian & Saravani, Nikčević et al., Palas Karaca & Oskay, Simpson et al., Swanson et al.) and the Impact of Events Scale (IES) (Lee et al., Séjourné et al.) was most commonly used to evaluate PTS symptoms. Some of these studies also measured outcomes such as perceived social support, social readjustment, coping, hopelessness, role function, reaction to miscarriage, and perceptions of care.

Table 4.1: Characteristics of Studies

Author, Year, Country, Sample	Study Type	Intervention Commencement after PL	Comparison Condition	Measurement Tool & Outcomes	Intervention Condition	Timing and Sequence of Intervention and Evaluation
Azogh et al., 2018[a] **Iran** **N=100**	Prevention	Subsequent pregnancy ~ 12-13 mos after stillbirth (≥ 20 wks)	TAU Routine prenatal care	PRAQ Pregnancy-related anxiety	Psychoeducation (PE) In-person Group	PRAQ: Baseline PE sessions: 4/4 wks, length NI PRAQ: 8 wks PB/~4 wks PT/14-15 mos PPL
Forrest et al., 1982 **England** **N=50**	Prevention	24-48 hours after stillbirth (> 28 wks) or neonatal death (< 7 days of birth)	TAU Routine hospital care	LEEDS Anxiety Depression	Bereavement Counselling (BCP) Program In person With partner	BCP sessions: 2-6 sessions, Average: 1-4 sessions/6 wks, length NI LEEDS: ~4.5 mos PT/6 mos PPL LEEDS: ~12.5 mos PT/14 mos PPL
Khodakarami et al., 2017[a] **Iran** **N=72**	Treatment Self-reported, HADS ≥ 8 mild to high	72 hours after prenatal loss	TAU Routine hospital care	HADS Anxiety Depression	Fordyce Happiness Counselling Program (FHCP) (CBT-based) In person Group	HADS: Baseline (72 hrs PPL) FHCP (CBT) sessions: 8/4 wks, 60 min HADS: Immed. PT/1 mos, 3 days PPL HADS: 1 mos PT/2 mos, 3 days PPL
Kong et al., 2014[a] **China** **N=280**	Prevention	Prior to discharge after miscarriage (< 24 hrs)	TAU Routine hospital care	BDI Depression	Supportive Counselling (SCP) Program In person (1^{st}) Telephone (2^{nd}) Individual	BDI: Baseline SCP sessions: 2/2 wks, 1^{st} 60 min, 2^{nd} 30 min BDI: 4 wks PT/6 wks PPL BDI: 2.5 mos PT/3 mos PPL BDI: 5.5 mos PT/6 mos PPL
Lake et al., 1987 **USA** **N=34**	Prevention	Prior to discharge after perinatal death (≥ 20 wks, ≥ 500g or died < 2 hours of birth)	TAU Routine hospital care	GIQ, GEI (adaptation) Grief	Perinatal Bereavement Intervention Program (PBIP) In person With family	PBIP sessions: 4/prior to discharge (2), 4-6 wks PPL(1), 4-6 mos PPL(1), length NI GIQ/GEI: Immed-2 mos PT/6 mos PPL

Lee et al., 1996[a] **England** **N=39 at 1st evaluation**	Prevention	2 wks after miscarriage (6-19 wks)	Control No intervention	HADS, IES[b] Anxiety Depression PTS	Psychological debriefing (PD) In person Individual	HADS/IES: Baseline (2 days PPL) PD session: 1/2 wks PPL, 60 min HADS/IES: 3.5 mos PT/4 mos PPL
Navidian et al., 2017[a] **Navidian & Saravani, 2018[a]** **Iran** **N=100**	Prevention	~2-4 wks after stillbirth (> 22 wks)	TAU Routine postnatal care No intervention	PGS, PPQ Grief (2018) PTS (2017)	Grief counselling (GC) (CBT-based) In person Group	PGS/PPQ: Baseline (7-10 days PPL, 2018, ≤ 4 wks, 2017) GC sessions: 4/2 wks, length NI PGS/PPQ: 4 wks PT/8-10 wks PPL
Neugebauer et al., 2006[a] **USA** **N=19**	Treatment Self-reported, HAM-D > 7 subsyndromal depression	Average 41.5 days (6 wks) after miscarriage (< 28 wks)	TAU No intervention	HAM-D Depression	Interpersonal counselling (IPC) Telephone Individual	HAM-D: Baseline (Average 34.5 days PPL) IPC sessions: ≤ 6/6 wks (majority ≤ 3 sessions), 1st 60 min, 2nd to ~6th 30 min HAM-D: 9 wks PB/2-3 wks PT/~14 wks PPL
Nikčević et al., 2007[a] **England** **N=141**	Prevention	~5 wks after early miscarriage (10-14 wks)	Control Medical consult (MC) No psychological intervention	HADS, TRIG Anxiety Depression Grief	CBT-based counselling In person Individual	HADS/TRIG: Baseline (~4 wks PPL) CBT session: 1/~5 wks PPL, 50 min HADS/TRIG: 2 wks PT/7 wks PPL HADS/TRIG: 11 wks PT/4 mos PPL
Palas Karaca & Oskay, 2021[a] **Turkey** **N=104**	Prevention	1 day after miscarriage (< 23 wks)	TAU Routine hospital care	DASS, MS Anxiety Depression Grief	Swanson Care Counselling (SCCP) Program In person, Telephone Individual	DASS/MS: Baseline (3rd day PPL/2nd day into treatment) SCCP sessions: 6/6 wks (Day 1, 3, 7, and weeks 3, 5, 6), 1st ~45 min, 2nd to 6th length NI DASS/MS: 6th wk PT/PPL
Séjourné et al., 2010b[a] **France** **N=134**	Prevention	Immediate intervention (II) (At time of prenatal loss)	Deferred intervention (DI) (3 mos PL)	HADS, IES Anxiety Depression PTS	CBT-based (includes PE) In person, Telephone Individual	CBT sessions: 2/2 wks of each other (II only), 1st ~ 37 min, 2nd length NI HADS/IES: 1 wk PT/3 wks PPL for II HADS/IES: 8 wks PT/10 wks PPL for II CBT sessions: 3 mos PPL (DI only) HADS/IES: 5.5 mos PT for II/2.5 mos PT for DI/6 mos PPL for II/DI
Simpson et al., 2015[a]	Prevention	12-24 hours after stillbirth	TAU	HAM-A, HAM-D,	Bereavement counselling (BC)	HAM-A/D/Grief measure: Baseline (12-24 hrs PPL)

India **N=90**		(> 22 wks)	Routine postnatal care	adapted grief measure Anxiety Depression Grief	In person Individual	BC sessions 3(12-24 hrs PPL, at discharge, 4-6 wks PPL), 30-45 min HAM-A/D/Grief measure: Immed. PT/4-6 wks PPL
Swanson et al., 2009 **USA** **N=341**	Prevention	Average 28.3-32.7 days after miscarriage (< 20 wks)	Control No intervention	CES-D, MGI (PG & GRE subscales) Depression Grief	Couple's Miscarriage Healing Project (CMHP) (Nurse Care, Self-Care, Combined Care) NC (In person) SC (At home) CC (In person/At home) Partners	CES-D/MGI: Baseline (1 mos PPL) NC sessions: 3(1, 5, 11 weeks PB), 60 min CES-D/MGI: Immed. PT/3.75 mos PPL CES-D/MGI: 2 mos PT/5.75 mos PPL CES-D/MGI: 10 mos PT/13.75 mos PPL

[a] Used in meta-analysis (k=10)

[b] IES: Could not determine total post-traumatic stress mean(SD) scores because study results presented as IES subscales (Intrusion/Avoidance) separately

There was a total of 1,504 women, across all the studies contributing to this review (n=13). Six studies (46.2%) evaluated their participants after a miscarriage (Kong et al., 2014; Lee et al., 1996; Neugebauer et al., 2006; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Swanson et al., 2009), three studies (23.1%) after a stillbirth (Azogh et al., 2018; Navidian et al., 2017; Navidian & Saravani, 2018; Simpson et al., 2015), two studies (15.4%) after a stillbirth or neonatal death (Forrest et al., 1982; Lake et al., 1987), and two studies (15.4%) after a prenatal loss (Khodakarami et al., 2017; Séjourné et al., 2010b). Three studies (23.1%) were conducted prior to the year 2000 (Forrest et al. Lake et al., Lee et al.). Small sample sizes (< 50 participants/group) were evident in three studies (23.1%) (Khodakarami et al., Nikčević et al., Palas Karaca & Oskay) and very small sample sizes (< 25 participants/group) were reported in four studies (30.8%) (Forrest et al., Lake et al., Lee et al., Neugebauer et al.). Most studies were conducted in Iran (n=3) (Azogh et al., Khodakarami et al., Navidian & Saravani, Navidian et al.), England (n=3) (Forrest et al., Lee et al., Nikčević et al.), and the USA (n=3) (Lake et al., Neugebauer et al., Swanson et al.). The remaining studies were conducted in France (Séjourné et al.), India (Simpson et al.), Turkey (Palas Karaca & Oskay), and China (Kong et al.).

Table 4.2 presents the characteristics of psychotherapeutic interventions. Eleven studies (84.6%) evaluated the effectiveness of psychotherapeutic intervention for prevention including CBT (18.2%) (Nikčević et al., 2007; Séjourné et al., 2010), a supportive intervention or program (psychological debriefing/psychoeducation/Swanson) (45.5%) (Azogh et al., 2018; Kong et al., 2014; Lee et al., 1996; Palas Karaca & Oskay, 2021; Swanson et al., 2009), and bereavement or grief counselling (36.3%) (Forrest et al., 1982; Navidian et al., 2017; Navidian & Saravani, 2018; Simpson et al., 2015; Lake et al., 1987). Two studies (15.4%) evaluated intervention effectiveness for treatment including a CBT-based program (Fordyce Happiness) (Khodakarami

et al., 2017), and an interpersonal counselling (IPC) intervention (Neugebauer et al., 2006). In addition, six studies (46.2%) facilitated intervention through a specialized program including the Fordyce Happiness Counselling program (FHCP) (Khodakarami et al.), Swanson's Care Counselling program (SCCP) (Palas Karaca & Oskay), Couple's Miscarriage Healing Project (CMHP) (Swanson et al.), Bereavement Counselling program (BCP) (Forrest et al.), Supportive Counselling program (SCP) (Kong et al.), and Perinatal Bereavement Intervention program (PBIP) (Lake et al.). The comparison groups across studies consisted of either no intervention or treatment as usual which encompassed routine prenatal care, routine postnatal care, routine hospital care.

Table 4.2: Characteristics of Psychotherapeutic Interventions

Study, Year Intervention Setting	Intervention Content (structure, goals, objectives)	Facilitator, Training, Credentials	Curriculum, Materials
Azogh et al., 2018 **Psychoeducation (PE)** **Community**	1. Introduction to unresolved sadness, 2. Psychological dimensions of subsequent pregnancy 3. Normal physiology of pregnancy, expressing memories of pregnancy, 4. Strategies to deal with subsequent pregnancy.	Therapist with MSc in Counselling in Midwifery, under supervision of a specialist	Curriculum based on work of O'leary et al. (2004), Côté-Arsenault and Donato (2011), and Khanzadeh et al. (2017). Reviewed by specialists in clinical psychology, counseling, obstetrics, gynecology, and midwifery education.
Forrest et al., 1982 **Bereavement Support and Counselling program (BCP)** **Clinical**	1. In hospital - encouraged to see, hold, name, photograph dead baby, choice of being placed in isolation ward, prior to discharge follow-up planned for obstetric/genetic counselling and to discuss post-mortem results with pediatrician. 2. Objectives of first session: establish rapport, assess personal resources for coping with loss, define supportive network at home, help create real memories of baby, and facilitate the expression of emotion. 3. Sessions continued until mourning and support in community was well-established.	Family Psychiatrist Social Worker	Program based on recommendations by the National Stillbirth Study Group (1979) to manage stillbirth/neonatal death AND bereavement counselling provided by professionals or self-help groups like Compassionate Friends or Stillbirth and Perinatal Death Association.
Khodakarami et al., 2017 **CBT-Based Counselling** **Fordyce Happiness Counselling program (FHCP)** **Setting NI**	1st session - introductions, session structure, regulations, info about definition, prevalence, causes, diagnosing and treating miscarriage, techniques to increase physical activity, social relations, creativity, productivity, engage in meaningful work, 2nd session - principles of healthy relationships, intimate relations 3rd session – principles of positive thinking and optimistic attitude, 4th session – planning and organizing techniques, 5th session – improving expectations, authentic self, healthy personality, 6th session – living in the present, 7th session - techniques to express emotions, decrease sadness and negative feelings, 8th session - techniques to value happiness.	Not identified	Based on the Fordyce Cognitive-Behavioral Counselling program (Fordyce, 1983).

Kong et al., 2014 **Supportive counselling** **Supportive Counselling Program (SCP)** **Clinical, Community**	1st session - listening, explaining, giving information on miscarriage, advising on future pregnancy, encouraging hope, 2nd session - reinforcing previous information, discussing feelings, worries and physical concerns, discovering possible underlying stress factors.	Nurse Counsellor with training in supportive/grief counselling, IPT, and identification of common psychiatric d/o	Based on the Manual for Nurse Counsellors - Counselling Women who have Miscarriage.
Lake et al., 1987 **Perinatal Bereavement Intervention** **Perinatal Bereavement Intervention program (PBIP)** **Clinical**	1st/2nd session – provide basic support/comfort, make loss real, encourage emotional expression, encourage open familial communication, preparation for community encounters, assess progress, 3rd session - preliminary autopsy report, assess patient/couples progress, encourage emotional release, describe incongruent grieving, assess local support, promote local support groups, discuss subsequent pregnancy plans, 4th session - final autopsy report, reassess emotional progress, social support, marital/sexual relationship, schedule anniversary appointment.	Perinatal Nurse, Perinatal Social Worker	Based on perinatal grief crisis intervention outlined in study (Lake et al., 1987, p. 1204).
Lee et al., 1996 **Psychological Debriefing (PD)** **Participant's home**	Single session - Introductory phase (explanation of study, structure of session, confidentiality), Fact phase (describes details, events, contexts, other's reactions, personal feelings, thoughts, expectations, and physical sensations from pregnancy to post-loss), Feeling phase (describes feelings around incidents from beginning to end), Symptom phase (discusses unusual situations, sensations and changes in their life since loss), Teaching phase (validation of symptoms, coping methods, information on delayed stress symptoms, anticipatory guidance), Re-entry phase (outstanding questions answered, plan of action for immediate and long-term future, disengagement).	Psychologist	Based on a format, customized to study participants, from methods described by Dyregrov (1989) and Mitchell (1983).
Navidian et al., 2017 **Navidian & Saravani, 2018** **Grief Counselling (GC) (CBT-based)**	1st session - familiarity, referral, group rules, grief stories, loss and previous experiences, stages of grieving/grief cycle, 2nd session – exposure to memory, identifying maternal feelings/dysfunctional beliefs/triggers, challenging negative thoughts, emotional expression, journaling, 3rd session - cycle of thought-emotion-behavior, modifying cognitive errors, cognitive restructuring, finding meaning in the loss, maternal post-traumatic growth using religious and spiritual teachings,	Therapist had MSc in Counseling in Midwifery, under the supervision of a PhD in Counseling (A. Navidian)	Based on other similar psycho-educational interventions in other studies and using some principles and fundamentals of CBT.

Community	4th session - practicing coping techniques and alternative methods - distraction, patience training, physical activity, social participation, adaptation, and planning for future pregnancy.		
Neugebauer et al., 2006 **Interpersonal Counselling (IPC)** **Community**	1st session - patient's history, miscarriage details, chronology of depressive symptoms relative to miscarriage, 2nd to 6th sessions - review depressive symptoms, explore interpersonal issues, teachings about depression and its interpersonal context, techniques for solving interpersonal difficulties, challenges with reproductive history/pregnancy losses. *All participants free to access mental health treatment outside of study protocol which was evaluated with Cornell Services Index. Study intervention concluded by participant's decision without counselor interference.	Psychiatric Social Work Therapist without prior IPT/IPC training (1), IPT-Certified Psychotherapists (2)	Based on the original IPC manual (Weissman & Klerman, unpublished paper, 1988), epidemiological work on miscarriage and depression (Neugebauer et al., 1992a, 1992b), and the perinatal bereavement literature (Ritsher & Neugebauer, 2002).
Nikčević et al., 2007 **CBT-Based Counselling** **Clinical**	Single session - Medical consult (MC) - results and implications of the medical investigations, aspects of general health, planning future pregnancies. Single session - Psychology consult (PC) - expression of emotions re: loss, normalize emotions, exposure to memories (to the images of the initial ultrasound scan and describing subsequent events in detail), cognitive restructuring (re: self-blame), reframing and reorganizing of the experience in the context of the available information as to the causes of the miscarriage, discuss worries concerning future attempts at reproduction.	Obstetrician Psychologist	Not indicated
Palas Karaca & Oskay, 2021 **Counselling based on Swanson Caring Theory (SCT)** **Swanson Care Counselling program (SCCP)** **Clinical** **Community**	5 Steps of SCT a. Knowing, b. Being with, c. Doing for, d. Enabling, e. Maintaining belief. 1st session – hospital, routine care (hemorrhage control, pain relief, counseling after miscarriage, family planning method, time of new pregnancy, signs of danger), initial assessment, and first 3 steps of SCT (establish a safe environment, effective communication, information on the process of miscarriage), 2nd session – home visit, first 4 steps of SCT (encouraged to accept miscarriage, express feelings, and engage in physical/social activities, 3rd session - phone call, 4th step of SCT (encouraged to express emotions, questions answered), 4th session - home/hospital, 5th step of SCT (inquiry re: shared feelings about miscarriage with family/friends,	1st author, PhD 2nd author, credentials NI	SCT Guidebooks

	encouraged to discuss positive/negative feelings, maintain hope/belief in becoming pregnant again), 5th session - phone call – 5th step of SCT (inquiry re: well-being, questions answered), 6th session - home visit – 5th step SCT (support desire for another pregnancy, information on issues).		
Séjourné et al., 2010b **CBT-Based Counselling** **Community**	Single session - empathic listening (facilitate therapeutic alliance, emotional expression), psychoeducation (context of miscarriage, incidence, normal physiological reactions/repercussions), CBT (cognitive reframing re: guilt/responsibility), problem resolution (concrete solutions to anticipated/encountered problems re: relationships, insensitivity, future pregnancy, coping strategies with communicating POV re: loss).	Primary Investigator (psychologist) Co-Author, credentials NI	Not indicated
Simpson et al., 2015 **Bereavement Counselling (BC)** **Clinical**	Not identified	Investigator (1-year post graduate diploma course in counselling)	Not identified
Swanson et al., 2009 **Couple-Focused Counselling/Intervention** **1. Nurse Caring (NC)** **2. Self Caring (SC)** **3. Combined Caring (CC)** **Couple's Miscarriage Healing Project (CMHP)** **Community**	NC - 3 counselling sessions, 1st session – discuss progress towards acceptance, identify losses/gains, personal growth, resilience, benefit of relationships in coping with adversity, 2nd session – facilitate sharing experience of loss, discuss available personal support, validate responses, offer support, re-entry into public as non-expecting, 3rd session - journaled progress of coping and resolve, discuss fears, plan for conception/pregnancy. SC - 3 videos and workbook modules, videos feature Swanson coaching couples on techniques to care for self and partner. Include scenes of ethnically diverse actors/couples sharing what it was like to go through MMM experience and provide reciprocal caring. Workbooks - 7 daily questions about MMM topics, reflections journaled (not collected as data). Self-report checklist on participant's use of the SC modules were mailed back to study personnel. CC - 1 counselling session, 3 self-guided video and workbook modules. Content of counselling session NI, SC	Nurse Counsellors (2), studied Swanson's Caring Theory (SCT), Meaning of Miscarriage Model (MMM) and reviewed transcripts from Swanson's prior RCT.	All interventions based on the SCT and the MMM. Both derived from phenomenological studies on women after miscarriage and on individuals with experience related to loss and childbearing stress. The MMM consists of 6 emotionally challenging and meaning laden experiences that commonly accompany miscarriage. NC: No materials SC: Videos, Workbooks (his/hers), CC: Used SC Videos/Workbooks (his/hers)

	modules (videos/workbooks) provided at counselling, remaining SC modules were mailed.

In most studies (n=11, 84.6%), the intervention was facilitated by a registered psychologist, licensed therapist, or other trained and licensed professional credentialled to provide specific counselling (Azogh et al., 2018; Forrest et al., 1982; Kong et al., 2014; Lee et al., 1996; Navidian et al., 2017; Navidian & Saravani, 2018; Neugebauer et al., 2006; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015; Swanson et al., 2009). The majority of interventions were delivered in person (n=8, 61.5%) (Azogh et al., Forrest et al., Khodakarami et al., 2017; Lake et al., 1987; Lee et al., Navidian et al., Navidian & Saravani, Nikčević et al., Simpson et al.), three were in group settings (37.5%) (Azogh et al., Khodakarami et al., Navidian et al., Navidian & Saravani), three were individual (Lee et al., Nikčević et al., Simpson et al.), and two (25%) included the partner/family (Forrest et al., Lake et al.). Three studies (23.1%) offered a combination of individual, in person and telephone consultation sessions (Kong et al., Palas Karaca & Oskay, Séjourné et al.) and one study (7.7%) offered individual sessions via telephone consultation (Neugebauer et al.). Another study randomly assigned couples to three intervention groups which facilitated in person counselling (nurse caring), provided home-based self-help material (self-caring), and utilized a combination of these two approaches (combined caring) (Swanson et al.). Most studies facilitated intervention in the community (n=6, 46.2%) (Azogh et al., Lee et al., Navidian et al., Navidian & Saravani, Neugebauer et al., Séjourné et al., Swanson et al.) and most facilitated multiple sessions (n=11, 84.6%) (Azogh et al., Forrest et al., Khodakarami et al., Kong et al., Lake et al., Navidian et al., Navidian & Saravani, Neugebauer et al., Palas Karaca & Oskay, Séjourné et al., Simpson et al., Swanson et al.).

Seven studies reported the outcomes of interest within eight weeks after prenatal loss (Khodakarami et al., 2017; Kong et al., 2014; Navidian et al., 2017; Navidian & Saravani, 2018;

Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015), seven studies reported between eight and 16 weeks (Kong et al., Lee et al., 1996; Navidian et al., Navidian & Saravani, Neugebauer et al., 2006; Nikčević et al., Séjourné et al., Swanson et al., 2009), and two studies after 16 weeks (Kong et al., Swanson et al.). Two studies reported outcomes 16 weeks after stillbirth or neonatal death (Forrest et al., 1982; Lake et al., 1987), and one study reported outcomes in a subsequent pregnancy (Azogh et al., 2018). There were seven studies (53.9%) reporting psychological outcomes at a single timepoint after the intervention (Azogh et al., Lake et al., Lee et al., Navidian et al., Navidian & Saravani, Neugebauer et al., Palas Karaca & Oskay, Simpson et al.), and six studies (46.2%) reporting outcomes at multiple timepoints after intervention (Forrest et al., Khodakarami et al., Kong et al., Nikčević et al., Séjourné et al., Swanson et al.).

Quality Assessment

Table 4.3 displays the quality assessment of included studies (n=13). The methodological quality was evaluated using the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool (Thomas et al., 2003). This included eight RCT's (Forrest et al., 1982; Kong et al., 2014; Lake et al., 1987; Lee et al., 1996; Neugebauer et al., 2006; Nikčević et al., 2007; Simpson et al., 2015; Swanson et al., 2009), and five quasi-experimental studies (Azogh et al., 2018; Khodakarami et al., 2017; Navidian et al., 2017; Navidian & Saravani, 2018; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b). Due to the limited number of studies being critically appraised, all were retained despite their methodologic quality.

Table 4.3: Effective Public Health Practice Project's (EPHPP) Quality Assessment

Study	Selection Bias	Study Design	Confounders	Blinding	Data Collection Methods	Withdrawal or Drop-Outs	Intervention Integrity	Analysis	Overall Rating[a]
Azogh et al., 2018	2	1	1	2	1	1	2	1	1
Forrest et al., 1982	2	1	1	2	2	2	2	1	2
Khodakarami et al., 2017	2	1	1	2	1	1	2	1	1
Kong et al., 2014	2	1	1	1	1	2	1	1	1
Lake et al., 1987	2	1	1	2	2	3	3	1	2
Lee et al., 1996	2	1	1	2	2	2	1	1	2
Navidian et al., 2017/2018	2	1	1	2	1	1	2	1	1
Neugebauer et al., 2006	1	1	1	2	1	2	2	1	1
Nikčević et al., 2007	2	1	1	2	2	1	1	1	1
Palas Karaca & Oskay, 2021	2	1	1	2	2	1	2	1	2
Séjourné et al., 2010	2	1	1	2	1	3	2	1	2
Simpson et al., 2015	2	1	1	2	2	3	3	1	2
Swanson et al., 2009	1	1	1	3	1	1	1	1	1

[a] 1 = Strong, 2 = Moderate, 3 = Weak

Effect on Symptoms Relative to Time after Prenatal Loss

Based on the first evaluation timepoint after intervention, a total of 949 women across 10 studies provided data that was used in the meta-analysis (Azogh et al., 2018; Khodakarami et al., 2017; Kong et al., 2014; Lee et al., 1996; Navidian et al., 2017; Navidian & Saravani, 2018; Neugebauer et al., 2006; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015). Table 4.4a illustrates relative pooled effect estimates and heterogeneity indices for anxiety, depressive, grief, and PTS symptoms within eight weeks and between eight and 16 weeks after prenatal loss. The corresponding forest plots are presented in Appendix G.

Table 4.4a: Effect on Symptoms Relative to Time after Prenatal Loss

Within 8 Weeks After Prenatal Loss			
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**
Anxiety	5	0.66 (0.21 – 1.10)[a]	80
Depression	6	0.45 (0.13 – 0.78)[a]	76
Grief	4	0.65 (-0.11 – 1.40)[b]	91
PTS	2	0.57 (0.29 – 0.85)[a]	0
Between 8 and 16 Weeks After Prenatal Loss			
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**
Anxiety	3	0.61 (-0.04 – 1.27)[b]	82
Depression	4	0.40 (0.06 – 0.74)[a]	65
Grief	1	NA	NA
PTS	1	NA	NA
Subgroup Differences			
Symptom	**k**	**Chi^2, df (p-value)**	**I^2**
Anxiety	5	0.01, 1 (0.92)[b]	0
Depression	6	0.05, 1 (0.83)[b]	0
Grief	NA	NA	NA
PTS	NA	NA	NA

Test for overall effect:

[a] Effect sizes that are statistically significant ($p < 0.05$)

[b] Effect sizes that are not statistically significant ($p \geq 0.05$)

Meta-analyses within eight weeks after prenatal loss were based on data from 423 women reporting their anxiety symptoms across five studies (Khodakarami et al., 2017; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015), 691 women rating their depressive symptoms across six studies (Khodakarami et al., Kong et al., 2014; Nikčević et al; Palas Karaca & Oskay; Séjourné et al; Simpson et al.), 351 women scoring their grief symptoms across four studies (Navidian & Saravani, 2018; Nikčević et al; Palas Karaca & Oskay; Simpson et al.), and 202 women measuring their PTS symptoms across two studies (Navidian et al., 2017; Séjourné et al.). The pooled effect size of psychotherapeutic interventions relative to comparison conditions across studies within eight weeks after prenatal loss was medium for symptoms of anxiety (Hedges' g 0.66, 95% CI, 0.21-1.10), depression (Hedges' g,

0.45, 95% CI, 0.13–0.78), grief (Hedges' g, 0.65, 95% CI, -0.11–1.40), and PTS (Hedges' g, 0.57, 95% CI, 0.29–0.85). The p-value of each relative pooled estimate was statistically significant for anxiety, depressive, and PTS symptoms within eight weeks after prenatal loss ($p<0.05$), but not for grief symptoms ($p=0.09$). Analyses between eight and 16 weeks after prenatal loss were based on data from 217 women reporting anxiety symptoms within three studies (Khodakarami et al., Nikčević et al; Séjourné et al.), and 485 women rating depressive symptoms within four studies (Khodakarami et al., Kong et al., Nikčević et al; Séjourné et al.). The relative pooled effect size of psychotherapeutic interventions between eight and 16 weeks after prenatal loss was medium for depressive symptoms (Hedges' g, 0.40, 95% CI, 0.06 – 0.74, $p=0.02$), and not statistically significant for anxiety symptoms ($p=0.07$). Heterogeneity was considerable between studies evaluating anxiety (80%), and depressive (76%) symptoms within the eight weeks after prenatal loss grouping and moderate between studies evaluating depressive (65%) symptoms in the eight and 16-week grouping; however, there was no significant subgroup ($p>0.05$) difference between both subgroup comparisons.

Effect on Symptoms Relative to Type of Psychotherapeutic Intervention

Table 4.4b presents an exploratory analysis for specific psychotherapeutic approaches including CBT-based intervention (Khodakarami et al., 2017; Nikčević et al., 2007; Séjourné et al., 2010b), supportive psychological intervention (Azogh et al., 2018; Kong et al., 2014; Lee et al., 1996; Palas Karaca & Oskay, 2021), and bereavement (Simpson et al., 2015) or grief counselling (Navidian et al., 2017/; Navidian & Saravani, 2018) at the first and second evaluation timepoints after intervention. Due to the lack of data, a comparative analysis could not be conducted for IPC (Neugebauer et al., 2006) or psychotherapeutic intervention evaluating PTS or grief symptoms, except when grief symptoms were evaluated as an outcome of

bereavement/grief counselling (Navidian & Saravani, Simpson et al.). These forest plots are found in Appendix H.

Table 4.4b: Effect on Symptoms Relative to Type of Psychotherapeutic Intervention

CBT-Based Intervention or Program							
First Evaluation				*Second Evaluation*			*Subgroup Differences*
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**	**K**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	3	0.52 (-0.15 – 1.19)[b]	85	3	0.61 (-0.04 – 1.27)[b]	82	0.84, 0
Depression	3	0.39 (-0.26 – 1.04)[b]	84	3	0.47 (-0.07 – 1.01)[b]	74	0.85, 0
Grief	1	NA	NA	1	NA	NA	NA
PTS	1	NA	NA	1	NA	NA	NA
Supportive Psychological Intervention or Program							
First Evaluation				*Second Evaluation*			*Subgroup Differences*
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**	**K**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	3	0.66 (0.10 – 1.22)[a]	75	0	NA	NA	NA
Depression	3	0.41 (-0.03 – 0.86)[b]	71	0	NA	NA	NA
Grief	1	NA	NA	0	NA	NA	NA
PTS	0	NA	NA	0	NA	NA	NA
Bereavement or Grief Counselling Intervention							
First Evaluation				*Second Evaluation*			*Subgroup Differences*
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**	**K**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	1	NA	NA	0	NA	NA	NA
Depression	1	NA	NA	0	NA	NA	NA
Grief	2	0.75 (0.45 – 1.04)[a]	0	0	NA	NA	NA
PTS	1	NA	NA	0	NA	NA	NA

Test for overall effect:

[a] Effect sizes that are statistically significant ($p < 0.05$)

[b] Effect sizes that are not statistically significant ($p \geq 0.05$)

Analysis results based on 242 women across three studies rating anxiety and depressive symptoms (Khodakarami et al., 2017; Nikčević et al., 2007; Séjourné et al., 2010b) suggest that a CBT-based intervention or program has a statistically non-significant medium effect on women's anxiety at the first (Hedges' g, 0.52; 95% CI, -0.15-1.19, p=0.13) and second evaluation (Hedges' g, 0.61; 95% CI, -0.04-1.27, p=0.07), and a non-significant small to medium effect on depressive symptoms at the first (Hedges' g, 0.39, 95% CI, -0.26-1.04, p=0.24) and second evaluation (Hedges' g, 0.47; 95% CI, -0.07-1.01, p=0.09) relative to comparison conditions.

Heterogeneity between studies was considerable for anxiety and depression at both evaluation points however, all p-values were statistically non-significant ($p > 0.05$).

With the anxiety outcomes of 230 women (Azogh et al., 2018; Lee et al., 1996; Palas Karaca & Oskay, 2021) and the depression outcomes of 398 women (Kong et al., 2014; Lee et al., Palas Karaca & Oskay) at the first evaluation after intervention across three studies, a supportive (psychological debriefing/psychoeducation) intervention or program showed a significant ($p=0.02$) medium effect on anxiety (Hedges' g, 0.66; 95% CI, 0.10-1.22) with considerable heterogeneity (75%), and had no effect on depressive symptoms ($p=0.07$). Further, based on 190 women's scores from two studies (Navidian & Saravani, 2018; Simpson et al., 2015), bereavement or grief counselling exhibited a significant ($p<0.00001$) large effect on their grief symptoms (Hedges' g, 0.75; 95% CI, 0.45-1.04) at the first evaluation point with no heterogeneity between studies.

A sensitivity analysis was conducted with a single outcome measure for comparisons included in the meta-analysis. (Appendix I).

Subgroup Analysis

Between two to four sessions of psychotherapeutic intervention had significant small to large effect with improving women's anxiety, depressive, grief, and PTS symptoms ($p<0.05$) (Table 4.5a). Further, five to eight sessions had exceptionally large effect with reducing anxiety (Hedges' g, 1.17), and depressive symptoms (Hedges' g, 0.92) ($p<0.05$). Despite the significant subgroup differences and considerable heterogeneity relative to anxiety and depressive symptoms, interventions had a significant effect in reducing anxiety and depression with multiple sessions when compared to a single session. There was insufficient data to analyse the

effect on PTS symptoms across all subgroups and in grief symptoms as a single session or between 5 and 8 sessions.

Table 4.5a: Effect on Symptoms Relative to the Number of Sessions

One Session			
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**
Anxiety	2	-0.03 (-0.40 – 0.35)[b]	0
Depression	2	-0.01 (-0.45 – 0.44)[b]	26
Grief	1	NA	NA
PTS	NA	NA	NA
Between 2 and 4 Sessions			
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**
Anxiety	3	0.55 (0.32 – 0.79)[a]	0
Depression	3	0.31 (0.09 – 0.53)[a]	20
Grief	2	0.75 (0.45 – 1.04)[a]	0
PTS	2	0.57 (0.29 – 0.85)[a]	0
Between 5 and 8 Sessions			
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**
Anxiety	2	1.17 (0.84 – 1.51)[a]	0
Depression	2	0.92 (0.59 – 1.24)[a]	0
Grief	1	NA	NA
PTS	NA	NA	NA
Subgroup Differences			
Symptom	**k**	**Chi^2, df (p-value)**	**I^2**
Anxiety	7	22.03, 2 (<0.0001)[a]	90.9
Depression	8	13.38, 2 (0.001)[a]	85.1
Grief	2	NA	NA
PTS	2	NA	NA

Test for overall effect**:**

[a] Statistically significant effect sizes ($p < 0.05$)

[b] Statistically non-significant effect sizes ($p \geq 0.05$)

Psychotherapeutic interventions that were initiated within one week after prenatal loss showed significant medium to exceptionally large effect in reducing anxiety (Hedges' g, 0.84), depression (Hedges' g, 0.57), and grief (Hedges' g, 1.12) symptoms ($p<0.05$) (Table 4.5b). Interventions initiated 2 weeks or more after loss did not have significant effect in reducing symptoms. While significant subgroup differences were evident relative to anxiety ($p=0.04$, $I^2=76.4\%$) and depression ($p=0.02$, $I^2=81.3\%$) with considerable heterogeneity, interventions were effective if initiated with women as proximal to the prenatal loss as possible.

Table 4.5b: Effect on Symptoms Relative to Certain Factors

Timing of Intervention Implementation							
	Within One Week After Loss			*Two Weeks or More After Loss*			*Subgroup Differences*
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**	**k**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	4	0.84 (0.47 – 1.20)[a]	63	3	0.22 (-0.24 – 0.68)[b]	62	0.04, 76.4
Depression	5	0.57 (0.24 – 0.89)[a]	73	3	0.00 (-0.35 – 0.35)[b]	0	0.02, 81.3
Grief	2	1.12 (0.29 – 1.94)[a]	85	2	0.18 (-1.03 – 1.39)[b]	93	0.21, 36.5
PTS	1	NA	NA	1	NA	NA	NA
Mode of Intervention Implementation							
	In-Person Only			*In-Person and Telephone*			*Subgroup Differences*
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**	**k**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	5	0.47 (0.07 – 0.88)[a]	73	2	0.84 (0.19 – 1.49)[a]	79	0.34, 0
Depression	5	0.41 (-0.06 – 0.87)[b]	71	3	0.41 (0.04 – 0.78)[a]	71	0.99, 0
Grief	3	0.36 (-0.39 – 1.10)[b]	89	1	NA	NA	NA
PTS	1	NA	NA	1	NA	NA	NA
Format of Intervention Implementation							
	Individual			*Group*			*Subgroup Differences*
Symptom	**k**	**Hedges' g (95% CI)**	**I^2**	**k**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	5	0.47 (0.04 – 0.89)[a]	76	2	0.86 (0.30 – 1.41)[a]	66	0.28, 15.3
Depression	7	0.33 (0.08 – 0.58)[a]	56	1	NA	NA	NA
Grief	3	0.60 (-0.49 – 1.69)[b]	94	1	NA	NA	NA
PTS	1	NA	NA	1	NA	NA	NA
Method of Intervention Implementation							
	Specialized Program			*Not a Specialized Program*			*Subgroup Differences*
Symptom	**K**	**Hedges' g (95% CI)**	**I^2**	**k**	**Hedges' g (95% CI)**	**I^2**	**p-value, I^2**
Anxiety	2	1.17 (0.84 – 1.51)[a]	0	5	0.37 (0.10 – 0.64)[a]	43	.0002, 92.6
Depression	3	0.65 (0.07 – 1.22)[a]	85	5	0.27 (-0.04 – 0.57)[b]	41	0.25, 25.3
Grief	1	NA	NA	3	0.36 (-0.39 – 1.10)[b]	89	NA
PTS	0	NA	NA	2	0.57 (0.29 – 0.85)[a]	0	NA

Test for overall effect:

[a] Effect sizes that are statistically significant ($p < 0.05$)

[b] Effect sizes that are not statistically significant ($p \geq 0.05$)

Psychotherapeutic intervention that was offered in person and via telephone, facilitated on an individual basis, or through a specialized program had significant small to exceptionally large (Hedges' g, 0.33-1.17) effect on improving anxiety and depressive symptoms ($p<0.05$). While interventions that were offered solely in person, individually (Hedges' g, 0.47), or outside of a specialized program (Hedges' g, 0.37) also had significant effect in improving anxiety symptoms, a larger effect was evident when sessions were offered in person and via telephone (Hedges' g, 0.84), in a group (Hedges' g, 0.86), and through a specialized program (Hedges' g, 1.17). Further, intervention offered outside of a specialized program had significant medium effect with improving PTS symptoms however, insufficient data prevented the comparison group of a specialized program, and the timing, format, and mode of intervention implementation subgroups from being analysed.

Psychotherapeutic interventions offered in person and outside of a specialized program did not show significant effect with improving depression and grief symptoms, nor did individual sessions have effect with reducing grief symptoms ($p>0.05$). There was insufficient data to analyse the intervention implementation comparison groups for grief symptoms (eg. mode, format and method), and depressive symptoms (eg. format). Forest plots for each subgroup analysis are found in Appendix J.

Narrative synthesis

The findings from three studies were narratively synthesized due to their ineligibility for the meta-analysis (Forrest et al., 1982; Lake et al., 1987; Swanson et al., 2009). Of the three studies, one showed a significant association between intervention and improvement in women's psychological distress (eg. depression and grief), specifically after miscarriage (Swanson et al.)

Forrest et al.'s (1982) RCT, wherein more than half of the participants (n=12, 60%) accessed between one and four couples-based bereavement counselling sessions within 6 weeks after PL, did not show a significant reduction in the proportion of women experiencing depressive and anxiety symptoms at the 6- and 14-month post-intervention evaluation. In Lake et al.'s (1987) RCT, participation in four sessions of family-based grief counselling completed as part of a Perinatal Bereavement Intervention program (PBIP) within four to six months after PL showed no significant improvement in grief symptom ratings relative to the comparison group (eg. routine hospital care). Nevertheless, using Bayesian inference in Swanson et al.'s (2009) RCT, three couples-focused counselling sessions provided by nurse counsellors were the most effective in accelerating improvement in women's depressive and grief symptoms when compared to the self-care intervention (SC), combined care (CC) intervention, and the control group. In addition, the self-care (SC) intervention was more effective in accelerating improvement in women's grief (pure grief and grief-related emotions) when compared to the combined care (CC) intervention and control group (Swanson et al.).

Intervention and Content Themes

Five studies (50%) showed statistically significant intervention effect in improving women's psychological distress (Azogh et al., 2018; Khodakarami et al., 2017; Navidian et al., 2017; Navidian & Saravani, 2018; Palas Karaca & Oskay, 2021; Simpson et al., 2015) across all meta-analytical comparisons as well as one study (33.3%) in the narrative synthesis (Swanson et al., 2009) ($p<0.05$). Three of the studies (50%) evaluated specialized psychotherapeutic programs based on the Swanson Caring Theory (SCT) (Palas Karaca & Oskay, Swanson et al.), the Fordyce Happiness fundamentals (Khodakarami et al.) and the Meaning of Miscarriage Model (MMM) (Swanson et al.). Two of the specialized programs used supportive

psychotherapy (Palas Karaca & Oskay; Swanson et al.) and one program utilized cognitive behavioral therapy (CBT) concepts (Khodakarami et al.). Of the three studies offering therapy outside a specialized program (Azogh et al; Navidian et al., Navidian & Saravani, Simpson et al.), two evaluated grief or bereavement counselling on grief, and/or anxiety, depression, and PTS symptoms (Navidian et al., Navidian & Saravani, Simpson et al.) and one study evaluated supportive psychological intervention on anxiety symptoms (Azogh et al.).

Themes across the five studies with significant findings and that outlined their intervention content (Azogh et al., 2018; Khodakarami et al., 2017; Navidian et al., 2017; Navidian & Saravani, 2018; Palas Karaca & Oskay, 2021; Swanson et al., 2009) included (a) establishing safety (cognitive, emotional, physical, environmental); (b) acknowledging the loss; (c) exploring the impact of loss; (d) processing emotions surrounding the loss; (e) becoming informed and effective coping strategies; (f) integrating the loss into life; (g) planning for the future (Appendix K). One study with significant intervention results did not describe the content of their intervention and thus, themes could not be identified (Simpson et al., 2015). Study examples of interventions related to establishing safety included giving information on the prevalence, causes, diagnosis, and treatment of miscarriage (Khodakarami et al.), the grief cycle (Navidian et al., Navidian & Saravani), physiology of pregnancy (Azogh et al.) providing hemorrhage and pain control (Palas Karaca & Oskay) and identifying personal supports (Swanson et al.). Credentialled professionals encouraged acknowledgement of the loss with participants by having them share their loss experience (Azogh et al; Navidian et al., Navidian & Saravani, Palas Karaca & Oskay), and encouraging them to realize the significance of its influence (Swanson et al.). Exploration of the impact of loss was facilitated by asking participants to determine what was lost and gained within the loss experience (Swanson et al.)

and how the loss influenced current experience, emotional state, perception of threats and vulnerabilities (Azogh et al.). Emotional processing surrounding the loss was supported when appropriate (Azogh et al., Navidian et al., Navidian & Saravani, Palas Karaca & Oskay, Swanson et al.). Psychoeducation related to the principles of optimistic thinking (Khodakarami et al.) is an example of becoming informed and building effective coping strategies; finding meaning in the loss and adapting to new life (Navidian et al., Navidian & Saravani) reflects the process of integrating the loss into life and facing ongoing fears of future loss; and pregnancy planning (Swanson et al.) addresses planning for the future.

All significant studies consisted of three or more sessions (k=6, 100%) (Azogh et al., 2018; Khodakarami et al., 2017; Navidian et al., 2017; Navidian & Saravani, 2018; Palas Karaca & Oskay, 2021; Simpson et al., 2015; Swanson et al., 2009) provided psychotherapeutic intervention preventatively (k=5, 83.3%) (Azogh et al., Navidian et al., Navidian & Saravani, Palas Karaca & Oskay; Simpson et al; Swanson et al.) were facilitated weekly or more frequently (k=4, 66.6%) (Azogh et al., Khodakarami et al., Navidian et al., Navidian & Saravani, Palas Karaca & Oskay) and were hosted in the community, completely or in part (k=4, 66.6%) (Azogh et al., Navidian et al., Navidian & Saravani, Palas Karaca & Oskay; Swanson et al.).

Alternately, three studies (30%) in the meta-analyses (Lee et al., 1996; Neugebauer et al., 2006; Nikčević et al., 2007) and two studies in the narrative synthesis (Forrest et al., 1982; Lake et al., 1987) showed insignificant intervention effect. Of the five studies that did not report significance with their intervention, all were RCTs (n=5, 100%) (Forrest et al., Lake et al., Lee et al., Neugebauer et al., Nikčević et al.), and most hosted intervention in a clinical setting (k=3, 60%) (Forrest et al., Lake et al., Nikčević et al.), initiated intervention between 2- and 6-weeks after prenatal loss (n=3, 60%) (Lee et al., Neugebauer et al., Nikčević et al.) and either scheduled

multiple interventions at intervals greater than weekly (k=3) (Forrest et al., Lake et al., Neugebauer et al.) or consisted of a single session (k=2) (Lee et al., Nikčević et al.). The single study that evaluated interpersonal therapy (IPC) on depressive symptoms in women after miscarriage found no effect (Neugebauer et al.).

Discussion

Summary of Results

Overall, this meta-analysis showed that, relative to comparison conditions, psychotherapeutic intervention is effective in decreasing anxiety (Khodakarami et al., 2017; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015), depressive (Khodakarami et al., Kong et al., 2014; Nikčević et al., Palas Karaca & Oskay, Séjourné et al., Simpson et al.), and PTS symptoms (Navidian et al., 2017; Séjourné et al.) within eight weeks after prenatal loss continuing to 12 weeks for depressive symptoms (Khodakarami et al., Kong et al.). Within eight weeks after prenatal loss the following interventions had the greatest significant effect on psychological distress (a) a supportive psychological counselling program (Palas Karaca & Oskay) and a CBT-based counselling program (Khodakarami et al.) on anxiety and depressive symptoms; (b) a supportive psychological counselling program (Palas Karaca & Oskay) followed by CBT-based grief counselling (Navidian & Saravani, 2018) and bereavement counselling (Simpson et al.) on grief symptoms; (c) CBT-based counselling (Séjourné et al.) and CBT-based grief counselling (Navidian et al.) on PTS symptoms. Also, anxiety symptoms improved at the first evaluation after supportive psychological intervention (Azogh et al., 2018; Lee et al., 1996; Palas Karaca & Oskay). Further examination of the statistically significant supportive psychological interventions showed effect when offered across multiple sessions (four to six) within 4-6 weeks after loss, provided through a variety of

approaches (in person or in person and telephone, individually or group), and based on either the Swanson Care Theory or involving psychoeducation (Azogh et al., Palas Karaca & Oskay). Interestingly, grief symptoms did not show a significant improvement within eight weeks after prenatal loss ($p=0.09$) however, when bereavement or grief counselling was analysed as a subgroup, the effect on grief symptoms was significantly large ($p<0.00001$). The grief or bereavement counselling interventions in the subgroup analysis were offered across multiple sessions, in person, and individually or in group to completion within eight weeks after prenatal loss (Navidian & Saravani, Simpson et al.).

These results are inconsistent with the findings of other reviews. For example, Shaohua and Shorey's (2021) meta-analysis found that psychosocial interventions reduce depression, anxiety, and grief in parents after PL however in the current meta-analysis, grief symptoms improved only with bereavement or grief counselling (Navidian & Saravani, 2018; Simpson et al., 2015). This may be related to Shaohua and Shorey's inclusion criteria for studies with samples that also included men. It is possible that bereavement or grief counselling is more effective in improving women's grief after a PL than improving men's grief. It is also possible that the results favouring a comparison condition in a single study included in the eight weeks after prenatal loss grouping (Nikčević et al., 2007), which was not included in the bereavement/grief counselling subgroup analysis, influenced the improvements in grief symptoms evident across other studies within that the same grouping (Navidian & Saravani; Palas Karaca & Oskay, 2021; Simpson et al.) to insignificance. Further, Hämmerli et al.'s (2009) meta-analysis showed that face-to-face psychological intervention had no effect on infertile couple's anxiety and depression. The divergence of these results from findings within the current meta-analysis may be related to the combination of Hämmerli et al.'s exclusive study inclusion

criteria related to prospective control group designs (randomized or non-randomized) and the use of psychological intervention and strategies based on psychological theory or their permissive inclusion criteria related to samples (men and women) and infertility labels (according to dichotomous and graded classification systems) (Gnoth et al., 2005; Habbema et al., 2005; WHO, 2002). For example, while this meta-analysis sought to evaluate psychotherapeutic interventions or programs facilitated by credentialled professionals similar to Hämmerli et al., the intervention effect was evaluated in women only. The sample difference may magnify the influence gender has on psychological intervention effectiveness within this meta-analysis or result in overly conservative findings in Hämmerli et al.'s review.

Despite the improvements from psychotherapeutic intervention shown within eight weeks after prenatal loss for anxiety (Khodakarami et al., 2017; Nikčević et al., 2007; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015) and up to 12 weeks for depressive symptoms (Khodakarami et al., Kong et al., 2014; Nikčević et al., Palas Karaca & Oskay, Séjourné et al., Simpson et al.), a subgroup analysis found that these effects were not evident with CBT-based interventions or programs at two evaluation points after intervention (Khodakarami et al., Nikčević et al., Séjourné et al.). Contrarily, Lau et al.'s (2017) meta-analysis showed therapist-supported internet-based CBT to improve anxiety and depression in postpartum women and Ashford et al.'s (2016) systematic review showed computer- or web-based mental health interventions, most of which were CBT or CBT-based techniques (behavioral activation), during pregnancy, postpartum or after pregnancy loss were effective in improving women's depression and complicated grief but not women's anxiety symptoms. Ashford et al. surmised the lack of improvement in overall anxiety may be a related to interventions that were designed to improve depression, postpartum stress, complicated grief, or

other mental health outcomes, rather than to improve anxiety specifically. Notably, of the three individual studies in the CBT subgroup analysis for anxiety and depression (Khodakarami et al., Nikčević et al., Séjourné et al.), none offered internet- or web-based CBT as studies in Lau et al.'s and Ashford et al.'s review had but rather, offered CBT in-person or in-person and by telephone. Upon closer examination of the three studies comprising this subgroup analysis (Khodakarami et al., Nikčević et al., Séjourné et al.), significant reductions in anxiety and depressive symptoms at the first and second evaluation after intervention were evident in a single study that offered CBT in multiple face-to-face group sessions (8 sessions) within 4 weeks and as part of a specialized program (Fordyce Happiness program) initiated within 72 hours after prenatal loss (Khodakarami et al.). Comparatively, the remaining two studies with insignificant results offered CBT in two sessions or fewer and were not part of a specialized program (Nikčević et al., Séjourné et al.). It is possible that the two studies with a limited number of sessions (Nikčević et al., Séjourné et al.) in the CBT subgroup analysis influenced results such that the CBT-based intervention appeared ineffective in decreasing anxiety and depression. Based on the in-depth examination, it is probable that CBT may be effective in reducing anxiety and depressive symptoms when offered across multiple sessions at least once a week or more frequently. For example, a preliminary open study found that women (n=14) affected by recurrent miscarriage experienced improvements in depression and anxiety symptoms after an average of 8.9 (SD 4.6) sessions of individual CBT (Nakano et al., 2013).

The effect of specific psychotherapeutic intervention on PTS symptoms could not be analysed and thus, closer examination of the two studies within the eight weeks or earlier grouping revealed that effective intervention consisted of CBT-based counselling (Séjourné et al., 2010b) or CBT-based grief counselling (Navidian et al., 2017). These interventions were

initiated on an individual basis immediately after prenatal loss (Séjourné et al.) or in groups within two to four weeks (Navidian et al.), delivered in person across multiple sessions weekly or more frequently and without the structure of a specialized program (Séjourné et al., Navidian et al.). It remains unknown if various approaches to intervention implementation (in person, telephone, other) or the structure of a specialized program would also benefit therapy to reduce PTS symptoms in women after prenatal loss. These improvements in PTS symptoms related to CBT-based intervention designed to reduce grief and grieving, coincides with Furuta et al.'s (2018) meta-analysis that shows trauma-focused psychological therapies (eg. exposure therapy, CBT, Eye Movement Desensitization and Reprocessing (EMDR), other psychological therapies) reduce post-traumatic stress symptoms in women, affected or unaffected by birth or delivery complications, up to six months post-partum. In addition, relevant studies (k=2) included in Nillni et al.'s (2018) systematic review showed that a manualized CBT intervention designed to reduce symptoms of trauma and enhance maternal-infant interactions was highly satisfactory to mothers of preterm neonates in the NICU (Shaw et al., 2013b) and decreased traumatic stress (anxiety and depression) by five weeks after their neonate's delivery (Shaw et al., 2013a). However, results were mixed in de Graaf et al.'s (2018) systematic review with studies that evaluated the effect of structured psychological interventions on preventing PTSD or PTSD symptoms following recent childbirth in women who were at high risk of developing a traumatic birth experience. Sixty percent of these studies (k=3) showed that structured psychological intervention resulted in significantly lower levels of postpartum PTSD symptoms (Jotzo & Poets, 2005) and fewer maternal PTSD symptoms (Ryding et al., 1998; Shaw et al., 2014) and as such, the authors deemed these results as insufficient evidence (de Graaff et al.).

Subgroup analyses showed that improvements in anxiety and depressive symptoms were most frequently associated with therapy initiated within a week after a prenatal loss (Khodakarami et al., 2017; Kong et al., 2014; Palas Karaca & Oskay, 2021; Séjourné et al., 2010b; Simpson et al., 2015), on an individual basis (Kong et al; Palas Karaca & Oskay; Séjourné et al; Simpson et al.) using dual approaches (in-person and telephone) (Kong et al; Palas Karaca & Oskay; Séjourné et al.), offered across multiple sessions (Khodakarami et al; Kong et al; Palas Karaca & Oskay; Séjourné et al; Simpson et al.), or structured as part of a specialized program (Khodakarami et al; Kong et al; Palas Karaca & Oskay). Therapy facilitated across multiple sessions (between 2 and 4) improved PTS and grief symptoms, initiated within the week after loss were also associated with improved grief and structured outside a specialized program reduced PTS symptoms. While there was limited data available, it is possible that the intervention effect with grief and PTS symptoms may have increased in tandem with the number of sessions similar to the pattern found with anxiety and depressive symptoms.

Of the interventions that showed statistical significance (Azogh et al., 2018; Khodakarami et al., 2017; Navidian et al., 2017; Navidian & Saravani, 2018; Palas Karaca & Oskay, 2021; Swanson et al., 2009), content themes included (a) establishing safety; (b) acknowledging the loss; (c) exploring the impact of loss; (d) processing emotions surrounding the loss; (e) becoming informed and effective coping strategies; (f) integrating the loss into life; (g) planning for the future. These themes are similar to aspects of Herman's (2015) stages of trauma recovery and Neimeyer's meaning reconstruction theory (Neimeyer, 2001; Neimeyer et al., 2010). For example, Herman's three stages of trauma recovery include safety and stabilization, remembrance and mourning, and reconnection and integration wherein those recovering revisit issues inherent at different stages with higher levels of integration. Further, the

meaning making process suggested in the meaning reconstruction model include sense making, benefit finding and identity change (Gillies & Neimeyer, 2006).

In summary, the findings in this review and meta-analysis suggest that offering supportive psychological counselling and CBT-based counselling interventions and programs based on contemporary trauma recovery and meaning reconstruction concepts to women within the week of their PL will have the greatest effect in reducing their anxiety, depressive, grief and PTS symptoms. In addition, facilitating multiple sessions in the community that are delivered weekly or more frequently by credentialled professionals will provide the most benefit to women after loss.

Strengths and Limitations

This is the first systematic review and meta-analysis that examined the effect of psychotherapeutic intervention facilitated by licensed or trained professionals or through a specialized program on women's psychological distress after prenatal loss or neonatal death and compared the content and delivery methods of the intervention that decreased distress. An explicit and systematic method in searching databases, organizational websites, and performing backward and forward citation searches were strengths. To reduce reviewer bias and facilitate reproducibility, the database searches were conducted by an expert health sciences librarian and the inclusion/exclusion procedure and data extraction processes were performed by two reviewers with content expertise. The review was strengthened by evidence integrated from experimental and quasi-experimental studies of the preceding 25 years, that was analysed and synthesized. Appropriate statistical procedures were used in Revman to analyse comparisons and evaluate effects on psychological distress symptoms and forest plots displayed pertinent data to simplify interpretation. To reduce sample size bias, Revman computed Hedges' g as the relative

effect estimate which was weighted to the number of participants included in the calculation using formulations established by Hedges (1985).

Despite the strengths of this review, the conclusions of the meta-analysis are based on a small number of studies (k=10). As a result, conducting a meta-bias to assess reporting or publication bias within comparisons was not possible. While studies were not excluded based on their methodologic quality, they were excluded if not published in English which may diminish generalizability to non-English speaking populations. Further, this review did not include conference presentations, dissertations, reviews, or discussion papers which limits access to grassroots information and data.

Of the women who experienced PL, those affected by neonatal death are evident in two studies only (15.4%) and comprised a cohort also including women affected by stillbirth (Forrest et al., 1982; Lake et al., 1987). Thus, in comparison to the cohort of women who had experienced prenatal loss across the remainder of studies (k=11), women affected by neonatal death are under-represented. This may negatively affect the generalizability of the results to these women. Additional research needs to focus on women who have experienced neonatal death.

When evaluating outcomes, there is potential for misclassification bias due to measurement at a single evaluation point or with self-report questionnaires (Matthey & Ross-Hamid, 2012). As a result, reports of psychological distress with studies included in this review may migrate to a false positive or false negative wherein distress is rated more severely than expected or less so, respectively. Future studies should establish multiple timepoint evaluations and interviewer-led questionnaires to reduce misclassification bias.

It is evident that the number of studies that evaluated intervention in reducing anxiety and depressive symptoms outweighed the number of studies evaluating grief and PTS symptoms.

However, the themes identified within the content of interventions that were effective in reducing all symptoms are consistent with contemporary trauma recovery and meaning reconstruction concepts. Despite this, generalizations of intervention effectiveness with women who have elevated grief or PTS symptoms after PL must be applied with caution. Further research may focus on evaluating the effect of intervention on grief and PTS symptoms after perinatal loss, specifically with grief counselling or trauma-focused psychological intervention.

Few studies evaluated outcomes related to perception, coping, adjustment, and relationship dynamics. These outcomes may influence states of psychological distress and thus, understanding how they interact in women after prenatal loss may contribute to our ability to improve the quality of health services. Future research would benefit from evaluating changes in women's perceptions, coping, adjustment, and relationship dynamics in tandem with psychological distress and engaging their primary partner in intervention.

The interventions utilized across studies were primarily delivered in person with no studies to compare internet-based psychotherapeutic intervention. A comprehensive review and meta-analysis (n=9,764) of participants who were treated using internet-based psychological interventions for a variety of issues and that used different types of measures found that, similar to therapy in person, internet-based psychological interventions had medium effect (Hedges' g, 0.53) on outcomes (Barak et al., 2008). Future trials should compare internet-based psychotherapeutic intervention with other methods of delivery or no intervention to examine variations in women immediately after prenatal loss vs. women after loss in a subsequent pregnancy and/or parenting, and timing with intervention initiation, prevention vs. treatment, and group vs. individual therapy.

Conclusion

This systematic review and meta-analysis provide evidence that psychotherapeutic intervention based on contemporary trauma recovery and meaning reconstruction concepts are the most effective with improving psychological distress in women affected by perinatal loss. The interventions that had the greatest impact on reducing (a) anxiety and depressive symptoms were a supportive psychological counselling program and a CBT-based counselling program; (b) grief symptoms were a supportive psychological counselling program followed by a CBT-based grief counselling intervention and bereavement counselling intervention; (c) PTS symptoms were CBT-based counselling and CBT-based grief counselling interventions. In addition, initiating therapy within the week of the loss, offering multiple sessions, facilitating weekly or more frequently, using a preventive approach, and hosting in the community were additional factors associated with improved distress. However, implementing intervention in-person or through a combination of approaches, or individually or in groups showed inconsistent benefit across psychological outcomes. Overall, these findings provide the necessary information to improve the psychotherapeutic services made available and accessible to women after prenatal loss.

Supplementary Information

Appendices

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Amendments

There were changes made in this review which deviate from descriptions in the original protocol. These changes are outlined in the beginning of this chapter, explained in the methods section and relate to database searches, critical appraisal measurement tools, and secondary outcomes analysed. Amendments reflecting these changes between protocol and systematic review and meta-analysis have been made in PROSPERO accordingly.

Authors' Contributions

EMC and DEK conceived and designed the study. EMC, DEK, and KAH developed the study methods and identified the inclusion/exclusion criteria. EMC and KAH created and finalized the search terms. KAH completed the original (2019) and updated searches (2020) in all databases, combined the results, removed the duplicates, exported the results to EndNote X8, and inserted preliminary data in the PRISMA flow diagram. EMC and KSB piloted all forms; reviewed all titles, abstracts, and full-text articles; selected studies to include and evaluated their

methodological quality. EMC extracted data from the included studies, conducted all meta-analysis comparisons, and identified themes within the content of effective psychotherapeutic interventions. KSB reviewed the details of the data extraction, meta-analysis, and thematic analysis for accuracy. EMC drafted this systematic review and meta-analysis manuscript. All authors reviewed, provided recommendations, and approved the final protocol manuscript. DEK is the guarantor of this systematic review and meta-analysis.

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Availability of Data and Materials

All datasets created and data acquired as a result of this review will be available upon reasonable request through the corresponding author. These may include database searches, search results, quality appraisal, data extraction from included studies, and meta-analysis details and results. The datasets supporting the conclusions of the meta-analysis are available in the Open Science Framework (https://osf.io/) repository, as developed and maintained by the Centre for Open Science.

Ethics Approval and Consent to Participate

This study is established on data from published studies which declares no requirement for ethics approval.

Consent for Publication

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

Chapter 5 Women's Perception of the Barriers and Facilitators Related to Discussing Their Emotional Health after Prenatal Loss and their Preferences in Emotional Care: A Cross-Sectional Descriptive Survey Study.

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Charrois, E. M., Giallo, R., Dimitropoulos, G. & Kingston, D. (Unpublished manuscript). Women's perception of the barriers and facilitators related to discussing their emotional health after prenatal loss and their preferences in emotional care: A cross-sectional descriptive survey study.

Abstract

Background: The aims of this study were to explore women's (1) experiences being asked about emotional health by a healthcare provider following prenatal loss; (2) perception of the barriers and facilitators to discussing their emotional health; (3) preferences in emotional care.

Methods: This online cross-sectional survey recruited women who experienced prenatal loss in the previous two years within Canada. Descriptive statistics identified women's experiences being asked about emotional health, most common barriers and facilitators to discussing emotional health, and their preferences in emotional care.

Results: Lack of knowledge and the influence of their correspondents were women's most common barriers to discussing emotional health. The attributes and practices of the healthcare provider were the most common facilitators. Women preferred to monitor their own emotional health using a phone application with flexible access to either a physician or emotional care professional.

Limitations: Most women identified as married/common-law, and Caucasian which may limit the generalizability of the findings.

Conclusions: Healthcare providers are recommended to initiate discussions about emotional health after prenatal loss and provide psychoeducational resources on common emotions and accessing emotional care. As such, it is important to provide healthcare providers with training in supporting women after their loss and the resources to support routine practice that includes discussions about emotional health. Future directions for practice, policy and research include focus on the development, implementation and evaluation of a universal, integrated emotional health screening, referral and intervention initiative that is responsive to the needs of women affected by prenatal loss.

Keywords

Barriers, Facilitators, Health screening, Preferences, Emotional care, Prenatal loss

Introduction

Prenatal loss, including miscarriage or stillbirth, can adversely affect maternal psychological and physical health in the short- and long-term (Beydoun & Saftlas, 2008; Campillo et al., 2017; Côté-Arsenault & Mahlangu, 1999; Kingston et al., 2012a; Toffol et al., 2013). Almost half of women experienced clinical anxiety immediately after a miscarriage (Prettyman et al., 1993), approximately one quarter (Prettyman et al.) to one third (Neugebauer et al., 1992a, Neugebauer et al., 1992b) experienced clinical depression after two weeks, over half rated high levels of grief after six to ten weeks (Murphy et al., 2014), and between one quarter to almost half experienced clinical post-traumatic stress disorder (PTSD) after one to three months (Engelhard et al., 2001). Emotional support and adequate mental health care for women who have experienced prenatal loss is critical given that mental health difficulties can increase risks for poor obstetrical outcomes in subsequent births (eg., preterm birth), child health concerns (eg., developmental delays), and family relationship problems (eg., couple relationship quality, parenting stress) (Armstrong et al., 2009; Barker et al., 2011; Beck, 1999; Cornish et al., 2006; Gaudet et al., 2010; Hobel et al., 2008; Kingston et al., 2012b; Kingston & Tough, 2013; Stein et al., 2012). Mental health difficulties are a significant burden on healthcare systems and society as a whole (Heazell et al., 2016). Mental health care initiatives to identify and support women experiencing mental health difficulties following prenatal loss is a public health priority.

A non-profit organization (eg., beyondblue: the national depression initiative) has indicated that universal mental health screening and care be included in routine perinatal practices to identify women experiencing mental health difficulties and link them to early intervention and support (Austin et al., 2011b). Because women affected by miscarriage, stillbirth or traumatic or complicated birth are at higher risk for psychological distress, specialist

care may be necessary, in addition to the psychosocial care recommended for perinatal women who are not at risk (Austin et al.). Evidence-based interventions to promote women's emotional health after prenatal loss do exist and could be provided following early identification. For example, a recent systematic review and meta-analysis reported that psychotherapeutic interventions (eg., supportive counselling and CBT-based counselling interventions and programs) are most effective in decreasing anxiety, depressive, grief and PTS symptoms in women affected by PL (eg., miscarriage, stillbirth, or neonatal death) (Charrois et al., Unpublished results) (Chapter 4). Another meta-analysis indicated that psychosocial interventions significantly reduced symptoms of depression, anxiety, and grief in parents after perinatal loss (Shaohua & Shorey, 2021). Despite the recognized need and availability of evidence-based interventions to promote the emotional health of women following prenatal loss, screening remains outside routine perinatal practice. To date, most provinces within Canada have not adopted an integrated screening, referral and intervention initiative that offers convenient and flexible emotional support to those affected by prenatal loss.

The development and implementation of a universal, integrated emotional health screening, referral and intervention initiative must be informed by women who have experienced prenatal loss to ensure that it is acceptable and tailored to their preferences. This is critical to ensuring that it is provided in a way that will overcome common barriers of access for women. Thus far, learnings from research with women and parents after prenatal loss revealed a need for consistent information related to the cause and prevalence (Emond et al., 2019), fetal delivery, grieving, and psychosocial care (Dekkers et al., 2018) and all relevant psychological aspects (Séjourné et al., 2010a) surrounding prenatal loss, in addition to being provided with written material of resources and services (Emond et al.). Whilst a lack of knowledge related to the

psychological aspects surrounding prenatal loss and access to psychosocial care is a barrier to women and parents in knowing when and how to access emotional care, little else is known. Thus, further investigation into their specific emotional care needs and predilections is required.

The purpose of this study is to understand how to engage women affected by prenatal loss in emotional health screening and their preferences in emotional care. As such, the aims are to explore women's (1) experiences being asked about emotional health by a healthcare provider following prenatal loss; (2) perception of the barriers and facilitators to discussing their emotional health with a healthcare provider; (3) preferences in the type and delivery method of emotional care. This survey was conducted during a COVID-19 pandemic and included a question on barriers related to the pandemic. The evidence generated in this study may be used to develop and implement a universal screening and referral initiative that is responsive to women's needs after a prenatal loss.

Methods

Study Design, Recruitment, Setting, and Inclusion Criteria

This study was an online cross-sectional descriptive survey of women across Canada who had experienced a prenatal loss. Women were recruited through eleven social media advertising campaigns (Appendix L) on Facebook and Instagram that were scheduled consecutively every two weeks beginning June 25, 2020, and re-scheduled weekly on July 11 until September 19, 2020, to maximize engagement statistics. The survey link was also available on a Facebook page (eg., Pregnancy Loss Matters) and a perinatal mental health website (Kingston, 2020) from June 2020 to August 2021.

Details about the study (Appendix M) and implied consent (Appendix N) were provided at the beginning of the online survey. References to crisis and support services were also

supplied. By proceeding to the preliminary screening questions, respondents confirmed implied consent with the understanding that completing the survey may invoke uncomfortable feelings and that exiting the survey without providing a reason and without personal consequence was an option at any point in the survey.

Women were eligible to participate in the survey if they (a) had experienced a miscarriage or stillbirth in the previous two years; (b) had experienced their loss in Canada; (c) were over 18 years of age; (d) able to read, write, and speak in English; (e) consented to complete the survey. The preliminary screening questions navigated respondents to the survey exit if they had not experienced their loss in Canada or in the last two years. The survey exit provided an explanation of the main criteria and objectives of the study and its irrelevancy to the respondent, presented a message of gratitude for the respondent's interest, and offered an invitation to participate in future research of relevance.

Once respondents completed the survey, the data was immediately encrypted and stored on a password protected Qualtrics server, accessible only to the researcher (EMC). This study was originally approved by the Conjoint Health Research Ethics Board (CHREB), University of Calgary (REB-19-1990) on March 17, 2020 and renewed on March 17, 2021.

Sample Size

The sample size calculation for this study is based on the resident population of women in Canada between 18 and 44 years of age in 2020 (n=6.77 million) (Statista, 2020). The prevalence of clinically documented miscarriages reported in Canada, the USA, and the UK is 15 to 20% (Campillo et al., 2017; Geller et al., 2010; Kingston et al., 2012), with approximately 1% of pregnancies ending in stillbirth (Gold et al., 2007). As such, using a 95% confidence level and a 5% margin of error (alpha=0.05), a minimum of 255 female participants are required to

adequately represent 21% of 6.77 million women in Canada who may have experienced a prenatal loss.

Online Survey

The survey questions were adapted from a questionnaire developed for a previous study examining the barriers and facilitators influencing pregnant women's perceptions of mental health screening (Kingston et al., 2015a) and were customized to women affected by prenatal loss. Questions related to demographics, mental health history and prenatal loss were adapted from the National Maternity Experiences Survey (Chalmers et al., 2008; Dzakpasu et al, 2008).

Perinatal mental health experts (n=5) and professionals (registered nurses, unit managers, social worker, research coordinator) across prenatal loss programs in Calgary (n=3) and Edmonton (n=4) provided a review of the questions and revisions were made to terminology and the number of questions. The survey was then piloted with a group of diverse women who had previously experienced a prenatal loss (n=5) with additional revisions to terminology.

The survey consisted of 65 questions, two of which were open-ended, eight were branching, four were open-ended extensions, and the remainder were closed-ended (Appendix Q). The survey was designed to elicit self-reported data that could be completed in 10 minutes. Main sections in the survey included (a) demographics (7 items); (b) prenatal loss details (5 items); (c) emotional health history (4 items); (d) experience discussing their emotional health surrounding their loss (10 items); (e) perception of the barriers (16 items) and facilitators (16 items) that influence their desire or ability to discuss their emotional health; (f) preferences in emotional care assessment/screening and access (7 items).

Sixteen items evaluating the barriers in discussing emotional health were introduced in the survey with the statement, 'did any of the following discourage you from discussing your

emotional health related to your prenatal loss with a healthcare provider'. Likewise, sixteen items assessing the facilitators in discussing emotional health were presented by the preliminary statement, 'do any of the following encourage you to discuss your emotional health related to your prenatal loss with a healthcare provider? Respondents were requested to rate the pertinence of each item using the 4-point Likert scale (1=strongly agree to 4=strongly disagree). The question of COVID-19's influence in discussing emotional health included yes/no options which extended to an open-ended question that offered an opportunity for a brief explanation. An additional question asked women to rate the level of influence a healthcare provider's approach had on facilitating discussion related to emotional health surrounding prenatal loss.

Data Analysis and Synthesis

SPSS version 26 was used to generate statistics that described the sample, and women's experiences of being asked about emotional health by healthcare providers following prenatal loss (Aim 1), barriers and facilitators to discussing emotional health with a healthcare provider (Aim 2), and preferences in the type and delivery method of emotional care following prenatal loss (Aim 3). Demographic characteristics (eg., age at time of survey, marital status, level of education, household income, ethnicity, gestation period at time of prenatal loss, time since prenatal loss, region of residence, history of repeated loss, number of children, history of diagnosis and treatment of depression, anxiety, stress or emotional concerns) associated with women's experiences (Aim 1), barriers and facilitators (Aim 2), and preferences (Aim 3) were identified using crosstabulation analysis.

The open-ended answers from questions inquiring about experiences (Aim 1), barriers (Aim 2) and preferences (Aim 3) were thematically analysed using Braun & Clarke's (2006) six-step thematic analysis process. The responses were reviewed, collated and themes were

identified according to the important features within the data. The themes were then integrated into study results and discussion.

Results

Sample Characteristics

Of the 1,243 women who commenced the online survey, 833 women completed it (67% survey completion). The mean age of the sample who completed the survey was 31.99 years of age (SD=4.951) and their characteristics are presented in Table 5.1. The majority of women were under 35 years of age, had a bachelor's degree or higher, identified as Caucasian, and had one or more children. Almost all respondents reported they were married or common-law and experienced their loss before 20 weeks gestation. Over half indicated that their most recent prenatal loss was their first and that their loss occurred less than one year ago. Of those who provided a response, almost half indicated that they had previously been diagnosed with an emotional concern and almost all of those diagnosed, received treatment.

Table 5.1: Socio-Demographic Descriptors of Survey Participants (n=833)

Descriptors	**n (%)**
Age at time of survey	
Younger than 35 years of age	567 (68.1)
Older than 34 years of age	266 (31.9)
Marital status at time of survey	
Married or common-law	794 (95.3)
Other[a]	39 (4.7)
Highest level of education	
No bachelor's degree[b]	291 (34.9)
Bachelor's degree or higher[c]	542 (65.1)
Household income in past year, before taxes and deductions	
Under $100,000	416 (49.9)
Over $100,00	417 (50.1)
Ethnicity	
Non-Caucasian[d]	129 (15.5)
Caucasian	704 (84.5)
Gestation period at time of prenatal loss	
Before 20 weeks	768 (92.2)
At 20 weeks or later	65 (7.8)
Time since prenatal loss	
Less than one year ago	464 (55.7)
Between one and two years ago	369 (44.3)
Region of residence at time of prenatal loss	
Western Canada[e]	434 (52.1)
Northern Canada[f]	6 (0.7)
Central Canada[g]	285 (34.2)
Atlantic Canada[h]	108 (13)
History of prenatal loss	
First prenatal loss	525 (63)
More than one prenatal loss	308 (37)
One or more children	
Yes	513 (61.6)
No	320 (38.4)
Previously diagnosed with depression, anxiety, stress, or any other kind of emotional concern by a healthcare provider	

Yes	378 (45.4)
No	455 (54.6)
Received treatment for depression, anxiety, stress, or any other emotional concern[i]	
Yes	337 (89.2)
No	41 (10.8)
Asked by a healthcare provider about emotional health around prenatal loss	
Yes	411 (49.3)
No	422 (50.7)

[a] Other: Single (never married), widowed, separated, or divorced

[b] No bachelor's degree. Some elementary or high school, completed high school, or college, trade, or technical studies

[c] Bachelor's degree or higher. Undergraduate studies, graduate studies, or post-doctoral studies

[d] Non-Caucasian. Aboriginal, Arab/West Asian, African, Caribbean, Southeast/South/East/Central Asian, Latin American, or other

[e] Western Canada. British Columbia, Alberta, Saskatchewan, or Manitoba

[f] Northern Canada. Yukon, Northwest Territories, or Nunavut

[g] Central Canada. Ontario or Quebec

[h] Atlantic Canada. New Brunswick, PEI, Nova Scotia, or Newfoundland & Labrador

[i] Branch from previous questions therefore number of responses received n=378

Experience Related to Discussing Emotional Health

Women's experience in discussing their emotional health surrounding their prenatal loss is reported in Table 5.2. Over half of the women were not asked about their emotional health by a healthcare provider. Of those who were asked, most were asked by their physician, felt very comfortable with the approach, felt they could be completely honest, and regarded the experience as positive. Women who reported that another healthcare provider inquired about their emotional health were most commonly asked by pregnancy loss program staff (24.1%) or an emergency room physician (20.5%).

Three quarters of women who were not asked about their emotional health by a healthcare provider, did not initiate discussion. One quarter of them initiated discussion most commonly with physicians and the majority indicated that they felt somewhat uncomfortable

doing so and felt they could be only somewhat honest. Regardless, half of the respondents who initiated discussion rated it as a positive experience. Other healthcare providers, with whom women initiated conversation about their emotional health, were therapists (24.1%) and psychologists (20.7%).

Socio-demographic characteristics were similar between women who were asked about their emotional health and women who were not. However, the majority of women that participated in this survey had experienced a miscarriage (92.2%) and of the women who were asked about their emotional health, four out of five (81.5%) had experienced a stillbirth and just over two out of five had experienced a miscarriage (eg., prenatal loss prior to 20 weeks gestation). Thus, having experienced a miscarriage may be a factor preventing access to emotional health screening and psychotherapeutic care in comparison to having experienced a stillbirth.

Table 5.2: Experience Related to Discussing Emotional Health (n=833)

Survey Question	**n (%)**
A healthcare provider asked about my emotional health around my prenatal loss	
No	422 (50.7)
Yes	411 (49.3)
Since a healthcare provider did not ask about my emotional health, I brought it up on my own (n=422)	
No	315 (74.6)
Yes	107 (25.4)
I brought up my own emotional health with the following (select all that apply) (n=142)	
Midwife	7 (4.9)
Obstetrician	21 (14.8)
Nurse or Nurse Practitioner	16 (11.3)
Physician	53 (37.3)
Social worker	10 (7)
Another healthcare provider	35 (24.7)
When I brought up my emotional health, I would rate my comfort level at (n=107)	
Very comfortable	20 (18.7)
Somewhat comfortable	28 (26.2)
Somewhat uncomfortable	39 (36.4)
Very uncomfortable	20 (18.7)
When I brought up my emotional health, I felt I could be (n=107)	
Completely honest	35 (32.7)
Somewhat honest	65 (60.8)
Not honest at all	7 (6.5)
When I brought up my emotional health, I felt the experience was (n=107)	
A positive experience	56 (52.3)
A negative experience	51 (47.7)
Since a healthcare provider asked about my emotional health, I was asked by the following (select all that apply) (n=641)	
Midwife	44 (6.9)
Obstetrician	102 (15.9)
Nurse or Nurse Practitioner	117 (18.3)
Physician	233 (36.3)
Social worker	54 (8.4)
Another healthcare provider	91 (14.2)

When I was asked about my emotional health, I would rate my comfort level with the approach that was used (n=411)	
Very comfortable	213 (51.8)
Somewhat comfortable	152 (37)
Somewhat uncomfortable	34 (8.3)
Very uncomfortable	12 (2.9)
When I was asked about my emotional health, I felt I could be (n=411)	
Completely honest	218 (53)
Somewhat honest	171 (41.6)
Not honest at all	22 (5.4)
When I was asked about my emotional health, I felt the experience was (n=411)	
A positive experience	371 (90.3)
A negative experience	40 (9.7)

Barriers Related to Discussing Emotional Health

The factors that discouraged women from discussing their emotional health with a healthcare provider are displayed in Table 5.3. The six most common barriers women identified were (a) not feeling emotionally well enough to discuss emotional health; (b) a preference to discuss feelings with close correspondents (eg. partner, family, friend); (c) uncertainty of what emotions were not normal after prenatal loss; (d) invalidation of abnormal emotions by close correspondents and being told not to worry about them; (e) concern that a healthcare provider does not have time or interest; (f) uncertainty of who to talk to or where to go.

Thirty percent (n=214) of women indicated that factors related to the COVID-19 pandemic affected their desire or ability to discuss their emotional health with a healthcare provider. The most common themes identified were (a) virtual/phone consultations replacing in-person appointments were not conducive to sharing sensitive emotional concerns; (b) emotional health resources were no longer available or had limited accessibility and waitlists were long; (c)

bias against emotional needs related to prenatal loss not being a priority or being stigmatized when accessing emotional care for reasons unrelated to COVID-19. The themes and corresponding examples of participant comments are displayed in Table 5.4. It is worth mentioning that a small number of participants (n=6, 0.86%) reported that the COVID-19 pandemic was a facilitator to discussing emotional health with a healthcare provider. Their perception is reflected in the following statements,

- "I have heightened anxiety with COVID-19 and the grieving period is more difficult making me want to seek more help"
- "I am experiencing more anxiety about my current pregnancy after two previous losses and I am terrified, especially during the COVID-19 pandemic, that something is going to happen to this pregnancy too, which encouraged me to talk to my obstetrician about my anxiety and depression"
- "It put an emphasis on discussing my emotions with my family doctor due to work stress that was also occurring"
- "Virtual services are much easier to access than having to travel for in-person appointments"

Table 5.3: Barriers Related to Discussing Emotional Health (n=833)

Survey Question	**Strongly Disagree n (%)**	**Disagree n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
I am too busy	218 (26.2)	384 (46.1)	170 (20.4)	61 (7.3)
I am too embarrassed	211 (25.3)	324 (38.9)	244 (29.3)	54 (6.5)
I am not feeling physically well enough	164 (19.7)	343 (41.2)	268 (32.2)	58 (6.9)
I am not feeling emotionally well enough	93 (11.2)	191 (22.9)	338 (40.6)	211 (25.3)
There is not enough privacy to talk about my emotional health	211 (25.3)	405 (48.6)	161 (19.4)	56 (6.7)
I am unsure of who to talk to or where to go	141 (16.9)	234 (28.1)	281 (33.7)	177 (21.3)
I am unsure of what emotions are not normal after prenatal loss	101 (12.1)	213 (25.6)	310 (37.2)	209 (25.1)
I am worried about being placed on a long waiting list	190 (22.8)	351 (42.1)	187 (22.5)	105 (12.6)
I am worried that my children will be taken away from me	522 (62.7)	260 (31.2)	25 (3)	26 (3.1)
I am worried of being viewed negatively or being treated poorly	246 (29.5)	295 (35.4)	213 (25.6)	79 (9.5)
I am worried that healthcare providers do not have the time or interest	142 (17.1)	226 (27.1)	286 (34.3)	179 (21.5)
I am worried that the information I shared would not be kept confidential	359 (43.1)	376 (45.1)	58 (7)	40 (4.8)
I would rather discuss my feelings with my partner, friends, or family	75 (9)	223 (26.8)	353 (42.4)	182 (21.8)
My partner, friends or family told me that my emotions are normal and not to worry	104 (12.5)	217 (26)	388 (46.6)	124 (14.9)
My family doctor did not say I need to talk to a healthcare provider about my emotional health	179 (21.5)	276 (33.1)	264 (31.7)	114 (13.7)
COVID-19 affected my desire or ability to discuss my emotional health with a healthcare provider	--	481 (69.2)	214 (30.8)	--

Table 5.4: Barriers Related to COVID-19 Discouraging Women From Discussing Emotional Health (n=214)

Themes	Participant comments
Virtual/phone consultations replacing in-person appointments were not conducive to sharing sensitive emotional concerns	"Counselling services were only available virtually, so it was difficult to drum up the courage to begin talking about something so personal and raw to someone I had never met in person" "It was a phone call rather than in-person appointment, it was impersonal, and I was worried my roommates could overhear my conversations" "Over the phone there is no body language. I have to be brave and use words. Sometimes I don't want to use words" "I tried talking to my psychologist on Skype. It was not the same. I didn't feel free to talk" "I talk to my family doctor over the phone now. I don't think it's optimal to talk about how I feel. It seems like she is in a rush" "Different dynamics over Zoom"
Emotional health resources were no longer available, had limited access and waitlists were long	"I was not allowed to go see my family doctor because he wasn't taking patients unless essential" "Visits were limited, even while actively miscarrying" "I was set up for grief counselling, but it was cancelled due to COVID-19" "Waiting lists were too long, openings with paid psychologists were 3-4 months away at best" "It has affected the ability to just go and walk in to talk to someone. Now we have to make appointments and not be able to see someone for a couple weeks and by that time my feelings may be different, so I figure, what's the point?" "I haven't been able to follow-up with my practitioners because of COVID-19. I have a one-year-old now, but I do really struggle with managing my feelings surrounding our recurrent pregnancy losses (4 losses in total) and it still causes me anxiety"
Bias against emotional needs related to prenatal loss not being a priority or being stigmatized when accessing emotional care for reasons unrelated to COVID-19	"Medical needs were given more priority and time than my emotional needs" "I felt guilty talking about pregnancy loss during COVID-19 when so many people might require my counsellor's services" "I did not want to add burden to the system" "I felt if the loss wasn't COVID-19 related, I didn't think anyone would take me seriously" "People looked at you with prejudice, my feelings about my pregnancy loss seemed petty" "I walked in the hospital holding my deceased child in my hand and explained what happened. I was told this was very common. It was not common to me, and I was devastated. No one asked if I was okay, and I was treated as if I was infected with COVID-19" "Feel as if my emotional health wouldn't be valid given the current state of the world" "There seemed to be a stigma around children being conceived during COVID-19 lockdown. I felt this took away that excitement we should've felt and replaced it with shame" "It changes everything. I am scared to bother people. They get nasty" "Planned another pregnancy but my doctor discouraged me because of COVID-19"

Facilitators Related to Discussing Emotional Health

The factors that encouraged women to discuss their emotional health with a healthcare provider are presented in Table 5.5. Women agreed that all facilitators in the survey question encouraged them to discuss emotional health with a healthcare provider. The six most highly regarded factors that encouraged women to discuss their emotional health were having a healthcare provider who is (a) trustworthy; (b) sensitive and caring; (c) aware of all options, besides medication, that would help; (d) available consistently across time; (e) initiates discussion about emotional health at the first prenatal visit; (f) incorporates discussion of emotional health in their routine care. Further, almost all women indicated that a healthcare provider's approach has a major effect on encouraging women to discuss their emotional health.

Table 5.5: Facilitators Related to Discussing Emotional Health (n=833)

Survey Question	**Strongly Disagree n (%)**	**Disagree n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
Knowing that I am not alone if I am struggling emotionally	15 (1.8)	115 (13.8)	499 (59.9)	204 (24.5)
Knowing that talking about my emotional health is a normal part of care	11 (1.3)	70 (8.4)	486 (58.4)	266 (31.9)
Knowing I would not be referred to as mentally ill by the healthcare provider	30 (3.6)	159 (19.1)	393 (47.2)	251 (30.1)
Knowing ahead of time that I am going to be asked about my emotional health	28 (3.4)	144 (17.3)	449 (53.9)	212 (25.4)
Knowing what to expect if I tell a healthcare provider that I am not coping emotionally	24 (2.9)	121 (14.5)	451 (54.1)	237 (28.5)
Having a healthcare provider who is sensitive and caring	8 (1)	29 (3.5)	282 (33.8)	514 (61.7)
Having a reason of why my prenatal loss might have occurred	28 (3.4)	104 (12.5)	294 (35.3)	407 (48.9)
Having a healthcare provider who includes my partner in emotional care	25 (3)	118 (14.2)	379 (45.5)	311 (37.3)
Having a healthcare provider whom I trust and can be open and honest with	5 (0.6)	24 (2.9)	296 (35.5)	508 (61)
Having a healthcare provider ask me about my emotional health at my first prenatal visit	23 (2.8)	77 (9.2)	329 (39.5)	404 (48.5)
Having a healthcare provider who is aware of all options, besides psychiatric medication, that could help me	15 (1.8)	50 (6)	328 (39.4)	440 (52.8)
Having a healthcare provider who understands how my culture views emotions and prenatal loss	47 (5.6)	136 (16.3)	399 (47.9)	251 (30.1)
Having access to a convenient and flexible way of monitoring my own emotional health	16 (1.9)	102 (12.2)	428 (51.4)	287 (34.5)

Having the same healthcare provider with whom I can discuss my emotional health over time	13 (1.5)	53 (6.4)	393 (47.2)	374 (44.9)
Having access to a healthcare provider who specializes in the emotional health of women after prenatal loss	27 (3.2)	85 (10.2)	314 (37.7)	407 (48.9)
	Major Effect n (%)		**Minor/No Effect n (%)**	
Type of effect a healthcare provider's approach has on influencing reticent women to discuss their emotional health	764 (91.7)		69 (8.3)	

Preferences In Emotional Care

Women's preferences in emotional care after prenatal loss are presented in Table 5.6. Most women reported they preferred to monitor their own emotional health using a phone application with access to a healthcare provider whom they could contact at their discretion. The most preferred healthcare provider to share emotional health concerns before, during or after a prenatal loss was with a physician, followed by an emotional care professional. Other healthcare providers included psychologists (23.5%), therapists or counsellors (22.1%), and perinatal mental health therapists or specialists (19.1%).

Table 5.6: Preferences In Emotional Care

Survey Question	**n (%)**
I would prefer to share my emotional health with a healthcare provider (n=833)	
Before my prenatal loss	39 (4.7)
During my prenatal loss	42 (5)
After my prenatal loss	40 (4.8)
Before, during, and after my prenatal loss	668 (80.2)
Only when I decide to bring it up on my own	44 (5.3)
I would prefer my emotional health to be monitored by (n=789)	
Myself, with access to a healthcare provider	549 (69.6)
A healthcare provider	240 (30.4)
I would prefer the healthcare provider to monitor my emotional health (n=240)	
In-person	142 (59.2)
Telephone communication	43 (17.9)
Video communication (eg. facetime)	13 (5.4)
Text communication (eg. chat session)	23 (9.6)
Asynchronous communication (eg. email)	19 (7.9)
I would prefer to monitor my own emotional health by using a self-screening tool (n=549)	
Via phone app	366 (66.7)
Via webpage	120 (21.8)
On paper	63 (11.5)
When monitoring my own emotional health electronically, I would prefer to have access to the healthcare provider by having them (n=486)	
Contact me only if my emotional health ratings on the self-screening tool are getting worse	147 (30.3)
Contact me regularly to discuss my emotional health	123 (25.3)
Allow me the flexibility to contact them when I choose	216 (44.4)
When monitoring my own emotional health on paper, I would prefer to have access to the healthcare provider by having them (n=63)	
Contact me only if my emotional health ratings on the submitted self-screens are getting worse	8 (12.7)
Contact me regularly to discuss my emotional health	15 (23.8)
Allow me the flexibility to contact them when I choose	40 (63.5)
I would prefer to share my emotional health with (n=789)	
My midwife	85 (10.8)
A nurse or nurse practitioner	69 (8.7)

My family physician	281 (35.6)
An emotional care professional/coach	224 (28.4)
A social worker	57 (7.2)
Another healthcare provider	73 (9.3)

Discussion

The primary aims of this study were to explore women's (1) experiences of being asked about emotional health by healthcare providers following prenatal loss; (2) perception of the barriers and facilitators to discussing emotional health with a healthcare provider; (3) preferences related to the type and delivery method of emotional care. The evidence generated in this study may be used to develop and implement a universal, integrated emotional health screening, referral and intervention initiative that is responsive to the needs of women following prenatal loss.

The majority of women reported they were very comfortable with being asked about their emotional health, were willing to be completely honest, and perceived the interaction positively (Aim 1). Physicians most commonly asked women about their emotional health and with whom discussions were initiated. Most women who were not asked about their emotional health by a healthcare provider, did not bring it up on their own. That women are comfortable being asked, but are not always asked, could be related to a healthcare provider's knowledge, confidence, skills, and comfort with inquiring about emotional health. Questions related to emotional health can be challenging to pose, and even more so in the context of the grief associated with losing a pregnancy or newborn. While the majority of women affected by prenatal loss indicated they were very or somewhat uncomfortable initiating discussion when they were not asked, about half rated the experience positively. The discomfort in initiating discussion may have been amplified

by the vulnerable experience of a prenatal loss and by the healthcare environment during the COVID-19 pandemic. This highlights a dire need for healthcare providers to initiate discussions with women about their emotional health.

The six most common barriers identified by women who experienced prenatal loss were (a) not feeling emotionally well enough to discuss emotional health; (b) a preference to discuss feelings with close correspondents (eg. partner, family, friend); (c) uncertainty of what emotions were not normal after prenatal loss; (d) invalidation of abnormal emotions by close correspondents and being told not to worry about them; (e) concern that a healthcare provider does not have time or interest; (f) uncertainty of who to talk to or where to go (Aim 2). Four of these barriers relate to women's lack of knowledge (Aim 2c, 2f) and the influence of their close correspondents (Aim 2b, 2d). It is likely that women's decision against initiating discussion about their emotional health with a healthcare provider was compounded by being uncertain in identifying when and how to access emotional care services for elevated symptoms, having their symptoms inappropriately normalized by their correspondents and experiencing discouraging factors related to the COVID-19 pandemic.

First, being unaware of what emotions to expect after a prenatal loss or who to talk to may have exacerbated women's symptoms and thus, worsened their feeling of being too emotionally unwell to discuss their emotional health. Being emotionally unwell may have decreased women's motivation to seek for information or access expertise to discuss their emotional concerns. As previously reported by perinatal women, feeling exhausted by symptoms made it exceedingly difficult for them to engage with mental health services (Higgins et al., 2016). Also, the lack of knowledge is reflected in previous studies wherein women and parents identified a need for consistent information on the cause and prevalence of prenatal loss (Emond

et al., 2019), fetal delivery, grieving, psychosocial care (Dekkers et al., 2018) and all psychological aspects (Séjourné et al., 2010a). Parents also identified that receiving written material on resources and services after their miscarriage would have been helpful (Emond et al.). In addition, the immediate change to the access and provision of emotional care services after the declaration of the COVID-19 pandemic in Canada affected women's ability to know when and how to access emotional care services for elevated symptoms and contributed to the perception that their emotional health was not a priority. Factors related the COVID-19 pandemic that women found discouraging included (a) virtual/phone consultations that were not conducive to sharing sensitive emotional concerns; (b) emotional health resources that were no longer available and long waitlists; (c) bias against emotional needs and emotional care access for concerns unrelated to COVID-19. As such, the barriers identified by women affected by prenatal loss highlight the importance of providing women with psychoeducational resources about common experiences following prenatal loss, emotional care options, and how to discuss their prenatal experience with healthcare providers. Providing women with relevant education and options may improve their awareness to the importance of their emotional needs and their engagement with emotional care resources.

Second, women identified a preference to discuss their emotional health with their close correspondents (eg. partner, family, friend). Women's perception that healthcare providers do not have the time or interest to discuss emotional health likely reinforces their preference to discuss their emotional health with their close correspondents instead of accessing outside expertise. Similarly reported in a previous study, women stated they engaged in discussions with significant others (86%) and friends (70%) to cope after miscarriage (Séjourné et al., 2010a). Interestingly, while perinatal women with a refugee background identified the possibility that

family members may obstruct help-seeking and discourage honest disclosure (Nithianandan et al., 2016), women with perinatal depression confirmed that they had greater trust in the healthcare provider and the treatment offered when their family or friends recommended that they seek help (Jones, 2019; Shivakumar et al., 2014). Since disclosure of emotional distress to healthcare providers may not occur (Prevatt et al., 2018), actively fostering engagement with mental health services and explaining the process of screening and follow-up to perinatal women and their supports (Nithianandan et al.) may requit poor outcomes (Ayers et al., 2019). This highlights the positive sphere of influence that healthcare providers occupy when engaging women and their close correspondents in discussions about emotional health as part of their routine practice and providing relevant information about prenatal loss and recovery options.

The six most highly regarded factors that encouraged women to discuss their emotional health were having a healthcare provider who is (a) trustworthy; (b) sensitive and caring; (c) aware of all options, besides medication, that would help; (d) available consistently and across time; (e) initiates discussion about emotional health at the first prenatal visit; (f) incorporates discussion of emotional health in their routine care (Aim 2). These facilitators emphasize the influence of the healthcare provider's attributes on engaging women and their close correspondents in discussions about emotional health. As previously reported, positive interactions with healthcare providers have shown to assist women's ability to navigate through the experience of a miscarriage (Abboud & Liamputtong, 2005; Murphy & Merrell, 2009; Séjourné et al, 2010a; Smith et al., 2006). Most women verified that emotional support offered immediately or soon after their miscarriage (Nikcevic et al., 1998; Séjourné et al., Séjourné et al., 2010b) or during challenging time periods including subsequent pregnancies and anniversaries (Séjourné et al., Séjourné et al.) was most beneficial to them. Because the healthcare provider's

attributes, knowledge and practice are foundational to encouraging women and their correspondents, it is important to provide them with (a) professional development in supporting women after prenatal loss; (b) the resources to support routine practice that includes discussions about emotional health.

Most women indicated they preferred to monitor their own emotional health using a phone application and have access to a healthcare provider whom they may contact at their discretion (Aim 3). Women also indicated that an emotional care professional and a physician were priority healthcare providers with whom they preferred to share their emotional health and additionally, a psychologist, therapist or counsellor or perinatal mental health therapist. Women's self-monitoring promotes autonomy in managing emotional health surrounding a prenatal loss and seamless navigation in accessing appropriate resources in a timely manner. In other studies, women who had experienced miscarriage cited that the most beneficial interventions surrounding their loss included in-depth conversations with their physician, flexible access to a healthcare provider, improved medical follow-up and group therapy with other women who had experienced miscarriage (Séjourné et al., 2010a, Séjourné et al., 2010b). These women also indicated that educational material and regularly scheduled sessions or a consult with a psychologist or psychiatrist would have been helpful after their miscarriage as few of them took the initiative to seek for and contact a mental health professional on their own (Séjourné et al., Séjourné et al.). As noted in Dekker et al.'s (2019) cohort study, over three quarters of women, after a termination of pregnancy for fetal anomalies (TOPFA), accessed a psychologist post-discharge to assist them in their grieving and with their return to normal life. Notably, women's preference to monitor their own emotional health using a phone application is a low reserve initiative to screen and monitor emotional distress and an expedient route to access

emotional care. As Kingston et al. (2015b) previously identified, the preferred method of monitoring emotional health may be formatted to a risk identification and treatment decision pathway system and interfaced with electronic health records. As such, women's preferences in emotional care highlight the importance of developing and implementing a universal, integrated emotional health screening, referral and intervention initiative that is responsive to their needs.

Limitations

There are several limitations to note. First, participants who chose to complete the survey may differ from those who chose not to and may not represent the larger population of women affected by prenatal loss. For example, most of the women identified as married or common-law, Caucasian, and experienced a miscarriage (< 20 weeks' gestation). As such, this sociodemographic homogeneity may limit the generalizability of this study's findings. Second, online recruitment may recruit participants who prefer and select survey responses associated with emotional care delivered online. To reduce the potential of this limitation, recruitment was also planned to occur at pregnancy loss programs in Edmonton and Calgary however, the mandates surrounding the COVID-19 pandemic prevented this phase of the study from being launched. Third, the potential belief that responding to the survey would be burdensome, triggering, traumatizing or would complicate the bereavement process may have limited the impetus to participate. Finally, the survey did not include open-ended questions which limited women's ability to share barriers, facilitators or preferences that were not included as item options.

Strengths

Asking about emotional health and emotional experiences after prenatal loss is a very sensitive issue. To ensure relevance and sensitivity, the survey questions were adapted from a

questionnaire developed for a mental health study (Kingston et al., 2015a), a maternal experiences survey (Chalmers et al., 2008; Dzakpasu et al, 2008) and customized to women affected by prenatal loss. The survey questions were initially reviewed by perinatal mental health experts and perinatal professionals across pregnancy loss programs in Calgary and Edmonton and the revised survey was piloted with a group of women who had previously experienced a prenatal loss. Further, the study promotion advertisements and survey questionnaire used terminology to minimize the potential for trauma and were written at a grade 8 level.

Implications

The evidence generated in this study informs our understanding of how to engage women affected by prenatal loss in discussions about emotional health and the emotional care they prefer. However, our findings have broader implications. First, because over half of the women reported they were not asked about their emotional health, there is an urgent need for healthcare providers who have contact with women during or shortly after their prenatal loss to initiate discussions about emotional health as part of their routine practice. In addition, because a smaller proportion of women affected by miscarriage were asked about their emotional health compared to the proportion of women affected by stillbirth that were asked, future research may focus on identifying the predictors of this phenomenon and appropriate resolutions. Second, the barriers to discussing emotional health are mostly related to women's lack of knowledge and the influence of their close correspondents. This emphasizes the importance of providing women and their correspondents with psychoeducational resources about (a) common emotional experiences following prenatal loss; (b) emotional care options; (c) how to access healthcare providers and discuss emotional health. This will improve women's awareness of the significance of their emotional health surrounding prenatal loss and their confidence in the emotional care they are

receiving. Third, the attributes, knowledge and practice of the healthcare provider have been identified as facilitative to discussion related to emotional health after loss. This highlights the value of (a) providing professional development and training for healthcare providers who are likely to be supporting women after prenatal loss; (b) ensuring availability of the resources needed to support routine practice that includes discussion about women's emotional health. Fourth, women reported a preference to monitor their own emotional health using a phone application with self-determined and flexible access to a physician or emotional care professional after prenatal loss. As such, future directions for practice, policy and research may focus on the implementation and evaluation of a universal screening and referral initiative that is based on our understanding of engaging women and their correspondents in emotional health discussions and screening, and our knowledge of their preferences in the type and delivery method of emotional care.

Supplementary Information

Appendices

Appendix L: ONLINE RECRUITMENT ADVERTISEMENTS

Appendix M: STUDY DETAILS

Appendix N: IMPLIED CONSENT TO PARTICIPATE IN RESEARCH

Appendix O: DESCRIPTIVE SURVEY

Conflict of Interest Statement

All authors confirm that there are no actual or potential financial or personal conflicts of interest, or other relationships with other people or organizations, within three years of beginning this study, that could inappropriately influence, or be perceived to influence, this work. All authors confirm that there is no financial interest or benefit arising from the direct applications of this research study.

Submission Declaration

All authors confirm that the work within this study has not been previously published and is not under consideration for publication elsewhere. All authors, including the responsible authority where this study was conducted, confirm that the work completed in this study has been approved for publication submission. The authors declare that if the work within this study is accepted for publication, it will not be published elsewhere in any form, without the written consent of the copyright holder.

Declaration of Interest

None.

Author's Contributions

EMC and DEK conceived and designed the study and developed the survey. EMC developed the survey in Qualtrics. DEK displayed the survey link on her perinatal mental health website. EMC designed and funded all advertisement campaigns, and created a social media page which displayed the survey link. EMC collected, analyzed, and interpreted data, wrote the draft and revised the manuscript to its final form. All authors reviewed the draft and approved the final manuscript for publication.

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Availability of Data and Materials

All datasets created and data acquired as a result of this review will be available upon reasonable request through the corresponding author.

Ethics Approval and Consent to Participate

This study was approved by the Conjoint Health Research Ethics Board (CHREB), University of Calgary (REB-19-1990). Detail about the study and implied consent was provided at the beginning of the online survey. If respondents decided to proceed with the survey, it was interpreted as an indication of their consent to participate.

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Chapter 6 General Discussion

Clinical depression, anxiety, PTS symptom and elevated grief are more common in women after perinatal loss. Clinical anxiety was experienced by 41% of women immediately after a miscarriage (Prettyman et al., 1993), clinical depression by 22% (Prettyman et al.) and 36% (Neugebauer et al., 1992a, Neugebauer et al., 1992b) after two weeks, elevated grief by 54% after six to ten weeks (Murphy et al., 2014), and PTSD by 25% to 45% after one to three months (Engelhard et al., 2001). Psychological distress in expecting or parenting women after PL contributes to obstetrical, maternal and childhood issues (Armstrong et al., 2009; Gaudet et al., 2010). If treatment is not received early, there is significant, yet preventable burden placed on healthcare organizations and society in general (Heazell et al., 2016). In comparison, the postpartum prevalence rate of anxiety in a community sample is between 15-20% (Dennis et al., 2017; Lonstein, 2007; Nakić Radoš et al., 2018), depression is between 5-25% (Woody et al., 2017), and PTSD is between 1-6% (Denis et al., 2009; Grekin & O'Hara, 2014).

Recall that the factors contributing to psychological distress in women after PL included (a) limited societal acknowledgement of its negative impact on women; (b) limited understanding in close correspondents of being an effective support; (c) limited desire to seek resources for emotional health among women; (d) limited effective referral processes and psychotherapeutic intervention. Notably, evidence-based interventions to promote women's emotional health after prenatal loss have been identified and could be facilitated with women early following perinatal loss. Yet, despite the high prevalence of psychological distress, knowledge of the contributing factors, and effective psychotherapeutic interventions; screening for emotional health in women affected by PL remains outside routine perinatal practice with women affected by loss.

Australia's Clinical Practice Guidelines for Depression and Related Disorders in the Perinatal Period suggests that universal mental health screening and care be included in routine perinatal practices such that women experiencing mental health difficulties may be identified and triaged to early intervention and support (Austin et al., 2011b). The practice of mental health screening in a perinatal population has received positive feedback from general practitioners, health visitors (Chew-Graham et al., 2008) and additionally, healthcare consumers (Austin et al., 2011a). Only 4% of women accessing prenatal care reported they would refuse a mental health screen, if offered (Kingston et al., Miller et al., 2009). As such, there is a crucial need for early access to emotional health screening and psychotherapeutic intervention for women affected by perinatal loss.

The overall purpose of this doctoral thesis was to provide the evidence needed to inform the development of, and women's access to, a universal, integrated emotional health screening, referral and intervention initiative. To develop an evidence-based research program that would address the overall purpose, an examination of existing literature related to women affected by PL was conducted. Results of the literature review found that there were (a) no studies investigating longitudinal symptom trajectory patterns reflecting psychological distress and early factors predictive of elevated symptom trajectories; (b) no systematic reviews or meta-analyses analyzing and summarizing the effect of psychotherapeutic intervention and outlining their content and delivery method; (c) no studies identifying women's perception of their experiences and the influences in discussing their emotional health with a healthcare provider, and their preferences in emotional care. To address these limitations, this research program provided evidence by conducting a secondary data analysis study, a systematic review and meta-analysis study, and a cross-sectional descriptive survey study. The following section integrates and

summarizes the evidence across all studies, and discussion succeeds within the context of perinatal mental health guidelines, implications, knowledge translation, limitations and future research.

Summary of the Evidence

It is critical that discussion with women about their emotional health, and access to emotional health screening and emotional care occur in a timely manner after perinatal loss. Previous research reported that most women affected by a miscarriage indicated emotional support offered immediately or soon after their miscarriage (Nikčević et al., 1998; Séjourné et al., 2010a, Séjourné et al., 2010b) or during challenging times (eg. subsequent pregnancies, anniversaries) (Séjourné et al., Séjourné et al.) would be beneficial. As such, the evidence from each study that supports the development of, and women's access to, a universal, integrated emotional health screening, referral and intervention initiative, are summarized within their respective study sections.

Secondary Data Analysis

First, of the mothers affected by previous prenatal loss, approximately 42.3% experienced sub-clinical and clinical anxiety symptoms and 50.6% experienced sub-clinical and clinical depressive symptoms from early pregnancy up to 11 years after the birth of a child. Interestingly, previous research has shown that sub-clinical mental health symptoms are associated with (a) evolving symptoms of clinical severity at various points within the first 10 years postpartum (Wajid et al., 2020); (b) functional impairments in career and family (Prochaska et al, 2012); (c) emotional-behavioral challenges in children (Giallo et al., 2015; Kingston et al., 2018; Mughal et al., 2019). Thus, monitoring for sub-clinical symptoms in addition to clinical symptoms, is important to the early identification and treatment of worsening symptoms or emerging

psychosocial, relational, or behavioral challenges. Second, early factors that predict long-term sub-clinical or clinical anxiety and depressive symptom trajectory patterns over and above women's anxiety (eg. CCEI) and depression (eg. EPDS) scores at 18 weeks gestation were also identified. The strongest factors (most to least) that predict long-term (a) clinical depressive symptoms included a history of severe depression, taking anti-depressants during pregnancy and history of other psychiatric problems; (b) sub-clinical and clinical anxiety symptoms included a history of other psychiatric problems and a history of severe depression; (c) sub-clinical depressive symptoms included three or more stressful events between mid-pregnancy to two months postpartum and perceived inadequate social support between childbirth and two months postpartum. As such, the evidence generated from this study highlighted the importance of (a) screening women affected by prenatal loss for sub-clinical and clinical anxiety and depressive symptoms in subsequent pregnancy and up to 11 years after delivery; (b) assessing for early factors predictive of long-term sub-clinical and clinical anxiety and depressive symptoms immediately or within two months after prenatal loss.

Systematic Review and Meta-Analysis

First, psychotherapeutic intervention showed improvements with psychological distress in women affected by perinatal loss. Within eight weeks after loss, the interventions that had the greatest effect on reducing (a) anxiety and depressive symptoms were a supportive counselling program and a CBT-based counselling program; (b) grief symptoms were primarily, a supportive counselling program and secondarily, a CBT-based grief counselling or bereavement counselling intervention; (c) PTS symptoms were a CBT-based counselling and CBT-based grief counselling intervention. Second, the most effective psychotherapeutic interventions were initiated within the week of loss, delivered across multiple sessions, facilitated weekly or more frequently, hosted in

the community and provided preventively. Third, effective psychotherapeutic interventions were guided by (a) establishing safety; (b) acknowledging the loss; (c) exploring the impact of loss; (d) processing emotions surrounding the loss; (e) becoming informed and effective coping strategies; (f) integrating the loss into life; (g) planning for the future. These themes are consistent with contemporary trauma recovery and meaning reconstruction concepts. As such, the evidence generated from this study highlighted the importance of women's access to psychotherapeutic intervention that is (a) based on contemporary trauma recovery and meaning reconstruction concepts; (b) effective in reducing psychological distress after PL; (c) initiated within the week of loss; (d) delivered across multiple sessions; (e) facilitated weekly or more frequently.

Cross-Sectional Descriptive Survey

First, most women affected by a prenatal loss were very comfortable being asked about their emotional health by a healthcare provider, perceived the interaction positively and were willing to be completely honest. Second, women were discouraged from discussing their emotional health with a healthcare provider if they felt (a) uncertain in identifying when and how to access emotional care services for elevated symptoms; (b) too emotionally unwell; (c) healthcare providers lacked interest or time; (d) their symptoms were nothing to worry about as a result of close correspondents inappropriately normalizing elevated emotions. In addition, women were encouraged to discuss their emotional health if they felt the healthcare provider was (a) trustworthy; (b) caring and sensitive; (c) knowledgeable of emotional care options; (d) consistently available; (e) initiating discussions about emotional health during their first contact; (f) as part of their routine practice. Third, women reported a preference to monitor their own emotional health using a phone application with self-determined and flexible access to a

physician or emotional care professional. As such, the evidence generated from this study highlighted an urgent need for healthcare providers to (a) establish a trusting and therapeutic relationship with those affected by loss; (b) routinely engage women and their close correspondents at first contact in discussions about their emotional health; (c) provide psychoeducational resources about common emotions surrounding loss; (d) facilitate access to universal and integrated emotional care.

Current Perinatal Mental Health Guidelines

The most applicable and current guidelines relevant to perinatal mental health are Australia's Clinical Practice Guidelines for Depression and Related Disorders (Austin et al., 2011b) and Mental Health Care in the Perinatal Period (Austin et al., 2017), and the United Kingdom's Perinatal Mental Health Care Pathways (NICE, 2018). The evidence within this research program contributes to these guidelines by reinforcing that there is need to (a) routinely ask women and their close correspondents about their mental health or emotional well-being at each visit; (b) screen for psychological distress and psychosocial risks early in pregnancy and across the postpartum period; (c) ensure specialty services, psychosocial support and psychological interventions (eg. CBT) are available and accessible in a timely manner; (d) train perinatal healthcare providers in women-centred communication skills and psychosocial assessment (Austin et al., 2017; NICE, 2018); (e) expand electronic perinatal mental health supports (Austin et al., 2017; Danaher et al., 2012; Danaher et al., 2013; Milgrom et al., 2016).

Throughout Australia's guidelines (Austin et al., 2011b; Austin et al., 2017), considerations for at-risk sociocultural groups (eg. Aboriginal or Torres Strait Islander women, women living in remote areas) are discussed. However, women affected by PL are not discussed within the context of a group at increased risk for poor mental health outcomes in current

perinatal mental health guidelines (Austin et al., 2011b; Austin et al., 2017; NICE, 2018). This lack of discussion is present despite the prevalence of PL, short- and long-term patterns of increased psychological distress, and numerous contributing factors. Further, it is well-established that untreated maternal psychological distress places significant yet preventable burden on family, society, and healthcare systems (Heazell et al., 2016). As such, based on the needs of women who have experienced PL, the evidence generated within this research program that informs the development of, and improves women's access to, a universal, integrated emotional health screening, referral and intervention initiative will add value to the current perinatal mental health guidelines (Austin et al., NICE). The guidelines may be supplemented by using evidence that provides information related (a) longitudinal trajectory patterns of depressive and anxiety symptoms from early pregnancy up to pre-adolescence and early factors predictive of elevated symptom trajectory patterns; (b) effective psychotherapeutic interventions and their content and delivery methods; (c) experiences being asked about emotional health by a healthcare provider; (d) factors influencing discussions related to emotional health; (e) preferences in emotional care.

Implications of the Evidence

The evidence generated within this research program may be used to guide the development of (a) routine practice guidelines for perinatal healthcare providers in facilitating women's engagement in their emotional health; (b) a universal, integrated screening, referral and intervention initiative.

Perinatal healthcare providers may be a primary point of contact within the week of PL by initiating discussions related to emotional health with women and their close correspondents as part of their routine practice. During this discussion, providers may offer educational

resources on psychological distress surrounding loss and introduce and initiate registration within the emotional health screening, referral and intervention phone application. Registration may be designed to send a notification to an emotional care professional who will establish contact with the registrant(s) and provide orientation in the use of the application, and access to additional education and resource materials.

To support perinatal healthcare providers in adopting new practices that are responsive to the needs of women and their close correspondents after PL, it is important to provide professional development opportunities and ensure resources to support the adoption of new routine practices are available. Table 6.1 illustrates implications of the evidence for knowledge users, defined individuals who use research evidence to make informed decisions about practices, policies and/or programs related to health (Canadian Institutes of Health Research, 2012).

Table 6.1: Implications of the Evidence for Knowledge Users

Knowledge Users	Implications
Perinatal healthcare providers	Initiate discussion with women and their close correspondents about emotional health within the week of loss or at the first prenatal visit in a subsequent pregnancy as a part of routine practice Provide psychoeducational resources on common emotions after loss Provide information on accessing emotional care by promoting the use of the universal, integrated emotional health screening, referral and intervention application
Emotional care professionals	Establish initial contact with new users to the application after receiving notification of their registration Provide orientation in using the emotional health screening, referral and intervention application Provide education and resources on psychological distress and recovery after loss Be available as a resource to application registrants when needed/requested
Managers and clinical education specialists in perinatal and/or perinatal mental healthcare areas	Provide perinatal healthcare providers with, Professional development in supporting women and close correspondents after loss Resources to support routine practice that includes discussions about emotional health and promoting the use of an emotional health screening, referral and intervention application
	Provide emotional care professionals with, Professional development in supporting women and close correspondents after loss Training specific to working as an agent of the emotional health screening, referral and intervention application

Policy makers, directors, professional practice leaders	Design and develop routine practice guidelines for perinatal healthcare providers with engaging women and their close correspondents in discussions related to emotional health and facilitating access to emotional care by promoting the application Develop knowledge translation activities and initiative mobilization strategies within perinatal healthcare areas
Knowledge brokers	Liaise between researchers and policy makers and communicate research findings to knowledge users within perinatal areas

Identifying early predictors of long-term elevated symptom trajectories and assessing for sub-clinical and clinical psychometric scores at baseline and across time will improve the healthcare provider's ability to identify women with higher chances of (a) experiencing persistent poor outcomes related to depression or anxiety; (b) benefiting from continued monitoring and immediate or ongoing psychotherapeutic intervention after prenatal loss. As such, the initial emotional health screen within the application may include a series of questions related to the early factors predictive of long-term elevated symptom trajectories and psychometric data (eg. anxiety, depression, grief, PTS) based on reliable and validated psychometric tools. Responses to these questions may be extrapolated into categories according to the number of predictive factors identified and the severity psychological distress at baseline to create an at-risk profile. This profile may be interfaced with the corresponding long-term sub-clinical or clinical symptom trajectory pattern evident within the secondary data analysis study to design specific screening recommendations, referral and intervention pathways. Integrating supportive counselling and CBT-based counselling interventions and programs based on trauma recovery and meaning reconstruction, will have the greatest effect in reducing anxiety, depressive, grief and PTS symptoms. Interventions should also be designed to optimize

accessibility for women within the week after PL, facilitated across multiple sessions, and offered once a week or more frequently. Table 6.2 presents the implications of the evidence relevant to the emotional health screening, referral and intervention application.

Table 6.2: Implications for the Screening, Referral and Intervention Application

Phase of Application	Implications
Emotional Health Screen Baseline	Include questions related to the early factors predictive of long-term sub-clinical and clinical anxiety and depressive symptom trajectory patterns that is administered early in a subsequent pregnancy (first prenatal visit) Include questions based on reliable and validated psychometric tools to assess the severity of anxiety, depressive, grief and PTS symptoms
Psychotherapeutic Intervention	Supportive counselling and CBT-based counselling interventions and programs should be, Integrated as the referral intervention, Based on trauma recovery and meaning reconstruction concepts, Accessible to women within the week of loss, Facilitated across multiple sessions, Offered at least weekly or more frequently
Emotional Health Screen Ongoing	Include questions based on reliable and validated psychometric tools to assess severity of anxiety, depressive, grief and PTS symptoms
Application Algorithm	User registration on the application may be designed to prompt initial contact from an emotional care professional Responses to the questions related to early predictive factors and psychometric data from the initial emotional health screen may be used to create an at-risk profile according to the number of factors identified and severity of psychological distress Interfacing women's at-risk profile with the appropriate longitudinal trajectory pattern of sub-clinical/clinical anxiety and depressive symptoms may be designed to inform the algorithm for screening/monitoring recommendations and intervention referral at baseline and across time

	Interfacing women's psychometric data that is evaluated at algorithm-determined timepoints with the corresponding timepoint on the appropriate longitudinal trajectory pattern for sub-clinical/clinical anxiety and depressive symptoms may reflexively inform future screening, referral and intervention recommendations

Knowledge Translation

The Canadian Institutes of Health Research (2012) defines knowledge translation (KT) as "a dynamic and iterative process that includes synthesis, dissemination, exchange, and ethically-sound application of the knowledge to improve the health of Canadian's, provide more effective health services and products and strengthen the healthcare system" (p. 1). An integrated knowledge translation (KT) approach was used in this research program. At each stage of the research process, collaboration occurred with university-affiliated perinatal mental health, and child and adolescent mental health experts in Alberta and a research institute-affiliated intergenerational child and family health psychologist in Melbourne, Australia. During the descriptive survey research process, collaboration also occurred with knowledge users, including registered nurses, unit managers, social workers, and a research coordinator across six programs specific to pregnancy assessment, pregnancy and infant loss, and reproductive mental health and bereavement in Edmonton and Calgary. Knowledge users contributed to the development and design of the online recruitment advertisements and provided a critical review of the survey questions. In addition, a group of diverse women who had previously experienced prenatal loss were asked to participate in a pilot on the survey questions.

With vision for the future, the goal of the knowledge translation (KT) strategy is to raise awareness about the evidence generated within this research program to inform policy, practice, technology and future research that promotes emotional health in women after perinatal loss

(CIHR, 2012). The target audiences and knowledge users may include perinatal and mental health researchers, psychiatrists, obstetricians, physicians, hospital administrators, professional practice leaders, clinical education specialists, program directors and managers, perinatal and mental health nursing professionals, social workers, psychologists, licensed psychotherapists, prenatal and pregnancy loss clinic staff, and women who have experienced PL and their close correspondents.

To raise awareness about the evidence generated within this research program, knowledge translation (KT) strategies to diffuse the evidence may include (a) delivering presentations at provincial, national or international perinatal and mental health conferences; (b) posting video presentations on related websites; (c) hosting podcasts or participating as a guest; (d) continuing to publish in open-access, peer-reviewed journals (CIHR, 2012). Strategies to disseminate the evidence among knowledge users using specific and relevant messaging in the most impactful way may include (a) hosting small interactive group meetings; (b) providing written summaries and oral briefings; (c) networking and presenting to local and provincial perinatal and mental healthcare teams; (d) auditing documentation and providing initiative inception feedback to relevant healthcare teams (CIHR). Strategies to apply the evidence may include engaging appropriate knowledge users to (a) adapt the evidence for use within their perinatal environments; (b) identify barriers or facilitators that may influence the use of the evidence; (c) monitor the use of the evidence; (d) ensure sustainability of new routine practices (CIHR). Expertise that may assist with knowledge translation strategies would include that of knowledge brokers or knowledge translation specialists, management, professional practice leaders, editors and technology experts (CIHR).

Limitations

The results of this research program should be interpreted with awareness of several limitations.

Participant Population

Sample Selection.

The online cross-sectional descriptive survey (Chapter 5) was developed and conducted in a first world country with widely available technological resources and access to the internet. The women who participated in the online survey were recruited online using social media and self-selected. Selection bias may be introduced as participants who volunteered may have different demographic details than those who do not volunteer (Khazaal et al., 2014). For example, most of the survey participants identified as married or common-law, Caucasian, and experienced a miscarriage (< 20 weeks' gestation). Second, online recruitment may attract participants that are adept at using technology and tend to favour emotional care delivered online, a preference that may have influenced the results of the study. Third, women's perception of the burden associated with study participation may have limited their desire to participate or complete the survey resulting in lower engagement with the survey or higher attrition during survey completion. These limitations influence the possibility that respondents who completed the survey do not represent the population-as-a-whole. Thus, the findings may not be generalizable to women affected by PL who do not use social media, who are not adept at using or prefer not to use technology, who have limited access to the internet, or who are experiencing greater difficulties coping with their loss.

Sample Size.

The limitation of the systematic review (Chapter 4) relates to the small number of studies (k=10) from which conclusions within the meta-analysis were formulated. As a result, conducting a meta-bias to assess reporting or publication bias within comparisons was not possible.

Sample Attrition.

Like most prospective population-based studies, ALSPAC experienced substantial attrition from recruitment to study conclusion (Chapter 2). This phenomenon has shown to be associated with socioeconomic disadvantage and mental health issues and thus, may yield conservative estimates of true associations (Bould et al., 2013; Boyd et al., 2013; Capron et al., 2015; Kingsbury et al., 2015). In addition, the survey completion rate within the descriptive survey was 67% (Chapter 5), including 1,243 women who commenced the online survey and 833 women who completed it. As a result, the participant demographics and survey data from one in three completed surveys are missing and the reasons for survey attrition are unclear. There may be distinct heterogeneity between participants who completed the survey and those who engaged with the survey but did not complete.

Self-Reporting.

Shame or stigma may surround some variables and it is possible that mothers under-reported their history of abuse, history of abortion, or history of psychiatric problems (Chapter 2). In addition, mothers also provided self-reports of previous prenatal loss, which introduces the possibility of recall bias or participant's lack of awareness related to missed miscarriages. This may produce conservative samples of women who claim experience with perinatal loss. To validate the self-reports related to history and strengthen the findings, assessments conducted by

a health professional or self-reports based on responses shared by partners could have been used as well.

Type of Perinatal Loss.

The intention of this research program was to focus on women who had experienced perinatal loss. However, the largest cohort represented across studies were women who had experienced prenatal loss (miscarriage, stillbirth). This resulted from a lack of data or lack of clarity with the definition of neonatal death. First, in the secondary data analysis (Chapter 2), the variable corresponding to the questionnaire item inquiring whether the respondent "ever had any babies who were born alive but died later", did not include corresponding data identifying the baby's age on the day of their death. As a result, it was unclear whether the infant death variable in the ALSPAC dataset would align with the Canadian definition of neonatal death (< 28 days of delivery).Therefore, the infant death variable was not used in the analysis. Second, in the systematic review (Chapter 4), only two studies (15.4%) presented results on women affected by neonatal death as part of a larger cohort also including women affected by stillbirth. Third, because the majority of women represented in the secondary data analysis and the systematic review had experienced a prenatal loss, the inclusion criteria in the descriptive survey selected for the same cohort of women (Chapter 5). This decision intended to conserve consistency in the type of loss experienced by women across the studies within this research program. As such, extreme caution must be exercised in generalizing the findings from the systematic review to women who had experienced neonatal death and overall findings within the research program may be generalizable only to women affected by prenatal loss.

Psychotherapeutic Interventions

The number of studies included in the systematic review and meta-analysis that evaluated intervention in reducing anxiety and depressive symptoms outweighed the number of studies evaluating grief and PTS symptoms. Importantly, the themes identified within the content of interventions that were effective in reducing symptoms are consistent with contemporary trauma recovery and meaning reconstruction concepts. Despite this, generalizations related to intervention effectiveness with women who have elevated grief or PTS symptoms after PL must be approached with caution.

Future Research

This thesis offers several avenues for future research. While screening for early factors predictive of long-term psychological distress in a subsequent pregnancy and postpartum (Chapter 2) is important, some women do not experience a subsequent pregnancy. As such, future research may focus on identifying risk factors evident prior to a subsequent pregnancy from which a clinical decision-making tool designed to determine women's risk for longitudinal elevated psychological distress may be developed. Research may also focus on identifying predictors associated with symptom peaks at several timepoints longitudinally within sub-clinical and clinical anxiety and depressive trajectory patterns to inform emotional health screening algorithms, care pathways and resource allocation. Further, since the psychometric tool used with the ALSPAC cohort measured free-floating anxiety (eg., CCEI anxiety subscale), additional research that differentiates the influence of trait anxiety (eg., STAI) on the clinical anxiety trajectory from that of free-floating anxiety could reveal information that may be beneficial in determining effective avenues for assessment and treatment.

Despite the large proportion of women experiencing clinical levels of grief and PTS symptoms after PL and content themes of effective psychotherapeutic interventions reflecting trauma recovery and meaning reconstruction principles, there are a limited number of studies that evaluated the effect of psychotherapeutic intervention on grief and PTS symptoms. Future research should focus on the prevalence of grief and PTSD in women affected by PL, and psychotherapeutic intervention effectiveness. Further, advances are being made in neurobiological research and theory, and trauma-focused therapies based on the biopsychosocial trauma framework are showing significant effect in reducing somatic symptoms. As such, it is crucial that future research explore PL as a traumatic event and examine the effect of trauma-focused therapy on women's psychological and somatic distress. In addition, research must explore women's perception of healthcare practice and healthcare environments that would be sensitive to their experience to develop trauma-informed principles for perinatal healthcare providers and healthcare settings that provide services to those affected by perinatal loss. The lack of sufficient data related to coping, adjustment, and relationship dynamics across the studies in the systematic review (Chapter 4) resulted in the inability to analyse their association with psychological distress. Future research would benefit from evaluating changes in women's perceptions, coping, adjustment, mother/fetus-infant interactions and attachment, and relationship dynamics in tandem with psychological distress to improve our understanding of recovery for family systems after perinatal loss. Research must also focus on identifying additional factors associated with effective recovery in family systems to develop comprehensive psychotherapeutic support programs available to women and their close correspondents after perinatal loss.

The interventions utilized across studies in the systematic review and meta-analysis (Chapter 4) did not compare internet-based psychotherapeutic intervention. Future research directions may consider comparing internet-based psychotherapeutic intervention with other methods of delivery or no intervention to examine variations in women's psychological distress, coping, adjustment and relationship dynamics after PL, in a subsequent pregnancy and/or while parenting. Considerations may include comparing timing of intervention initiation, frequency of intervention, outcome measurement at several timepoints after intervention, prevention vs. treatment approaches, and group vs. individual therapy.

Future research may explore the effect of other factors in women's engagement with emotional health screening, self-monitoring, and decision-making in accessing emotional care after perinatal loss (Chapter 5). Also, additional research must focus on evaluating the screening, referral and intervention application from the perspective of women and their close correspondents who use it and the healthcare providers that promote it or work within its platform.

Last, research focusing on male partners and fathers affected by PL is extremely limited. As such, research may explore men's mental health patterns after PL and identify early factors associated with longitudinal poor mental health outcomes. In addition, research may examine facets related to mental health screening, psychosocial supports and psychotherapeutic interventions that are effective in men affected by PL and explore the context of becoming a father of children born subsequent to previous perinatal loss(es).

Closing Remarks

This thesis contributes the evidence needed to inform the development of, and women's access to, a universal, integrated emotional health screening, referral and intervention initiative

for Canadian women. First and foremost, within the week of a PL, it is crucial that perinatal healthcare providers (a) engage women and their close correspondents in discussing emotional health; (b) provide information about accessing emotional care by introducing the emotional health screening, referral and intervention phone application.

The emotional health screening, referral and intervention application will benefit from an initial emotional health screen that includes, a series of questions based on (a) the early factors predictive of long-term elevated symptom trajectories; (b) reliable and validated psychometric tools that assess the severity of anxiety, depressive, grief and PTS symptoms. The data received from the questions in the initial emotional health screen can be designed to triage women into specific screening, referral and intervention pathways. Triage from emotional health screening beyond the initial screen may be responsive to women's sub-clinical and clinical symptom severity ratings. Further, the most impactful referral intervention integrated into the emotional health screening, referral and intervention application are supportive counselling and CBT-based counselling interventions and programs based on contemporary trauma recovery and meaning reconstruction concepts. Ensuring these interventions and programs are accessible to women and their close correspondents within the week of PL and facilitated across multiple sessions at least once a week or more frequently will have the greatest effect in reducing psychological distress. A universal, integrated emotional health screening, referral and intervention application that is responsive to women's current symptom severity scores will improve women's access to up-to-date screening recommendations and timely and appropriate psychotherapeutic intervention and emotional care after a PL, in a subsequent pregnancy and across parenthood. The screening, referral and intervention initiative may, in turn, reduce preventable disease burden and financial liability to individuals, families, and the healthcare system.

Adopting routine practice that engages women and their close correspondents in discussing emotional health and using a universal screening, referral and intervention initiative will improve the healthcare experience surrounding a PL by facilitating early access and expediting referral to appropriate intervention. As such, it is important to provide appropriate training and resources to healthcare providers who will be discussing emotional health with women and their correspondents the week of their prenatal loss as part of their routine practice.

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APPENDIX A: COPYRIGHT PERMISSIONS

Declaration for Chapter 2

The signatures below agree that the, yet unpublished, manuscript entitled "Patterns and predictors of depressive and anxiety symptoms in mothers affected by previous prenatal loss in the ALSPAC birth cohort", may be included in the thesis.

_____

Muhammad Kashif Mughal

_____

Muhammad Arshad

_____

Abdul Wajid

_____

Katherine Stuart Bright

_____

Rebecca Giallo

_____

Dawn Kingston

Declaration for Chapter 3

I certify that the publication entitled, "Effectiveness of psychotherapeutic interventions on psychological distress in women who have experienced perinatal loss: A systematic review protocol", was a direct result of a research project towards this PhD, and that the reproduction in this thesis does not breach copyright regulations.

_____

Elyse M. Charrois

Declaration for Chapter 4

The signatures below agree that the, yet unpublished, manuscript entitled "Psychotherapeutic interventions to decrease psychological distress in women after perinatal loss: A systematic review and meta-analysis.", may be included in the thesis.

_____

Katherine Stuart Bright

_____

K. Alix Hayden

_____

Rebecca Giallo

_____

Gina Dimitropoulos

_____

Dawn Kingston

Declaration for Chapter 5

The signatures below agree that the, yet unpublished, manuscript entitled “Women's perception of the barriers and facilitators related to discussing their emotional health after prenatal loss and their preferences in emotional care: A cross-sectional descriptive survey study”, may be included in the thesis.

_____

Rebecca Giallo

_____

Gina Dimitropoulos

_____

Dawn Kingston

APPENDIX B: PRISMA-P CHECKLIST

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title: Effectiveness of Psychotherapeutic Interventions on the Psychological Distress in Women who have Experienced Perinatal Loss: A Systematic Review Protocol.	1	Identify the report as a systematic review, meta-analysis, or both. Systematic Review	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	1-2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	2-3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	3
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	3-4

Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix B
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	4-6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5-6
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	5-6
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	15-16
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	15-16

(Moher et al., 2015)

APPENDIX C: FINAL SEARCH STRATEGY 2019

Database: PsycINFO: 1806 to January Week 3, 2019

Search Strategy:

#	Searches	Results
1	exp SPONTANEOUS ABORTION/	801
2	(Infant* adj2 (loss* or death* or demise*)).mp.	1485
3	(Pregnancy adj2 loss*).mp.	497
4	miscarriage*.mp.	1164
5	(spontaneous abortion* or recurrent abortion*).mp.	989
6	(stillbirth* or still-birth* or stillborn* or still-born*).mp.	875
7	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj2 (loss* or death* or demise*)).mp.	571
8	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj2 (loss* or death* or demise*)).mp.	807
9	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj2 (loss* or death* or demise*)).mp.	79
10	or/1-9	4688
11	exp COUNSELING/	75116
12	exp PSYCHOTHERAPY/	210035
13	exp Cognitive Behavior Therapy/	18952
14	exp Cognitive Therapy/	13138
15	exp Behavior Therapy/	19256
16	exp Interpersonal Psychotherapy/	1283
17	exp "Acceptance and Commitment Therapy"/	1539
18	exp Dialectical Behavior Therapy/	1108
19	exp Couples Therapy/	4248
20	exp Marriage Counseling/	5155
21	exp Rational Emotive Behavior Therapy/	1765
22	exp Guided Imagery/	718
23	exp MINDFULNESS/	8447

24	exp Family Therapy/	21406
25	counsel*.mp.	120226
26	(psychotherap* or psycho-therap*).mp.	178589
27	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).mp.	39896
28	(acceptance adj1 commitment therap*).mp.	311
29	(acceptance-based adj1 therap*).mp.	68
30	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).mp.	1976
31	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).mp.	48975
32	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).mp.	232
33	Integrative Behavio* Couple* Therap*.mp.	132
34	((grief or bereavement) adj2 (therap* or counsel*)).mp.	1073
35	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).mp.	7
36	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).mp.	277
37	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).mp.	2792
38	guided imagery.mp.	1503
39	(mindfulness or mindfulness-based).mp.	12046
40	((couple* or marital or family) adj2 (therap* or counsel*)).mp.	35564
41	(emotion focus* adj1 therap*).mp.	747
42	(IPT or CBT).mp.	13529
43	therap*.tw,id.	393334
44	or/11-43	605641
45	10 and 44	738

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily: 1946 to January 28, 2019

Search Strategy:

#	Searches	Results
1	*Abortion, Spontaneous/ or *Abortion, Habitual/	15121
2	*Stillbirth/	2611
3	*Fetal Death/	9909
4	*Perinatal Death/	871
5	(Infant* adj1 (loss* or death* or demise*)).tw,kf.	9380
6	(Pregnancy adj1 loss*).tw,kf.	6336
7	miscarriage*.tw,kf.	12620
8	(spontaneous abortion* or recurrent abortion*).tw,kf.	10747
9	(stillbirth* or still-birth* or stillborn* or still-born*).tw,kf.	14666
10	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj1 (loss* or death* or demise*)).tw,kf.	5499
11	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj1 (loss* or death* or demise*)).tw,kf.	20965
12	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj1 (loss* or death* or demise*)).tw,kf.	2854
13	or/1-12	78833
14	*Counseling/	15377
15	*Psychotherapy/	35099
16	behavior therapy/ or emotion-focused therapy/ or person-centered psychotherapy/ or psychotherapy, brief/ or psychotherapy, multiple/ or psychotherapy, psychodynamic/ or psychotherapy, rational-emotive/	31229
17	cognitive behavioral therapy/ or "acceptance and commitment therapy"/ or mindfulness/	24900
18	Dialectical Behavior Therapy/	7
19	couples therapy/ or marital therapy/	2062
20	Family Therapy/	8569
21	counsel*.ti.	19098

22	(psychotherap* or psycho-therap*).tw,kf.	44081
23	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).tw,kf.	19595
24	(acceptance adj1 commitment therap*).tw,kf.	30
25	(acceptance-based adj1 therap*).tw,kf.	21
26	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).tw,kf.	728
27	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).tw,kf.	22450
28	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).tw,kf.	40
29	Integrative Behavio* Couple* Therap*.tw,kf.	30
30	((grief or bereavement) adj2 (therap* or counsel*)).tw,kf.	387
31	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).tw,kf.	7
32	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).tw,kf.	157
33	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).tw,kf.	2632
34	guided imagery.tw,kf.	675
35	(mindfulness or mindfulness-based).tw,kf.	5921
36	((couple* or marital or family) adj2 (therap* or counsel*)).tw,kf.	8191
37	(emotion focus* adj1 therap*).tw,kf.	113
38	(IPT or CBT).tw,kf.	11514
39	or/14-38	160313
40	13 and 39	528

Database: Embase: 1974 to January 29, 2019

Search Strategy:

#	Searches	Results
1	*spontaneous abortion/	9492
2	*recurrent abortion/	3608
3	*stillbirth/ or *perinatal death/ or *fetus death/	10121
4	(Infant* adj1 (loss* or death* or demise*)).tw,kw.	10944
5	(Pregnancy adj1 loss*).tw,kw.	10228
6	miscarriage*.tw,kw.	21751
7	(spontaneous abortion* or recurrent abortion*).tw,kw.	14584
8	(stillbirth* or still-birth* or stillborn* or still-born*).tw,kw.	19232
9	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj1 (loss* or death* or demise*)).tw,kw.	7159
10	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj1 (loss* or death* or demise*)).tw,kw.	26880
11	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj1 (loss* or death* or demise*)).tw,kw.	3966
12	or/1-11	97166
13	*counseling/	15320
14	*psychotherapy/	38112
15	couple therapy/ or emotion-focused therapy/ or family therapy/ or guided imagery/ or marital therapy/ or mindfulness/ or rational emotive behavior therapy/	22063
16	cognitive behavioral therapy/	7420
17	*cognitive therapy/ or "acceptance and commitment therapy"/ or *behavior therapy/	28539
18	counsel*.ti.	23000
19	(psychotherap* or psycho-therap*).tw,kw.	57064
20	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).tw,kw.	29361
21	(acceptance adj1 commitment therap*).tw,kw.	44
22	(acceptance-based adj1 therap*).tw,kw.	32
23	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).tw,kw.	1018

24	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).tw,kw.	33218
25	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).tw,kw.	51
26	Integrative Behavio* Couple* Therap*.tw,kw.	30
27	((grief or bereavement) adj2 (therap* or counsel*)).tw,kw.	516
28	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).tw,kw.	10
29	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).tw,kw.	213
30	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).tw,kw.	3864
31	guided imagery.tw,kw.	971
32	(mindfulness or mindfulness-based).tw,kw.	7846
33	((couple* or marital or family) adj2 (therap* or counsel*)).tw,kw.	12127
34	(emotion focus* adj1 therap*).tw,kw.	128
35	(IPT or CBT).tw,kw.	17054
36	or/13-35	180702
37	12 and 36	744

Database: EBM Reviews - Cochrane Central Register of Controlled Trials: December 2018

Search Strategy:

#	Searches	Results
1	*Abortion, Spontaneous/ or *Abortion, Habitual/	17
2	*Stillbirth/	0
3	*Fetal Death/	0
4	*Perinatal Death/	0
5	(Infant* adj1 (loss* or death* or demise*)).tw,kf.	250
6	(Pregnancy adj1 loss*).tw,kf.	457
7	miscarriage*.tw,kf.	1277
8	(spontaneous abortion* or recurrent abortion*).tw,kf.	447
9	(stillbirth* or still-birth* or stillborn* or still-born*).tw,kf.	521
10	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj1 (loss* or death* or demise*)).tw,kf.	309
11	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj1 (loss* or death* or demise*)).tw,kf.	971
12	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj1 (loss* or death* or demise*)).tw,kf.	89
13	or/1-12	3571
14	*Counseling/	0
15	*Psychotherapy/	2
16	behavior therapy/ or emotion-focused therapy/ or person-centered psychotherapy/ or psychotherapy, brief/ or psychotherapy, multiple/ or psychotherapy, psychodynamic/ or psychotherapy, rational-emotive/	5073
17	cognitive behavioral therapy/ or "acceptance and commitment therapy"/ or mindfulness/	646
18	Dialectical Behavior Therapy/	0
19	couples therapy/ or marital therapy/	214
20	Family Therapy/	858
21	counsel*.ti.	3401
22	(psychotherap* or psycho-therap*).tw,kf.	5192

23	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).tw,kf.	9990
24	(acceptance adj1 commitment therap*).tw,kf.	449
25	(acceptance-based adj1 therap*).tw,kf.	11
26	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).tw,kf.	244
27	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).tw,kf.	9837
28	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).tw,kf.	5
29	Integrative Behavio* Couple* Therap*.tw,kf.	14
30	((grief or bereavement) adj2 (therap* or counsel*)).tw,kf.	64
31	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).tw,kf.	3
32	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).tw,kf.	84
33	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).tw,kf.	175
34	guided imagery.tw,kf.	376
35	(mindfulness or mindfulness-based).tw,kf.	2742
36	((couple* or marital or family) adj2 (therap* or counsel*)).tw,kf.	1240
37	(emotion focus* adj1 therap*).tw,kf.	34
38	(IPT or CBT).tw,kf.	5921
39	or/14-38	27976
40	13 and 39	57

Database: SCOPUS: January 29, 2019

Search Strategy:

((TITLE-ABS-KEY ((*psychotherap** OR *psycho-therap**))) OR (TITLE-ABS-KEY ((*cognitive* W/2 (*therap** OR *psychotherap** OR *psycho-therap**)))) OR (TITLE-ABS-KEY ((*acceptance* W/1 *commitment* AND *therap**) OR (*acceptance-based* W/1 *therap**))) OR (TITLE-ABS-KEY ((*"complicated grief"* OR *"Functional Analytic"* OR *behavior** OR *behaviour** OR *interpersonal* OR *inter-personal* OR *dialectical*) W/1 (*therap** OR *psycotherap** OR *psycho-therap**))) OR ((TITLE-ABS-KEY ((*rational* W/1 (*emotive** OR *therap** OR *psychotherap** OR *psycho-therap**))) OR TITLE-ABS-KEY (*"guided imagery"* OR *"Integrative Behavio* Couple* Therap*"*) OR TITLE-ABS-KEY ((*mindfulness* OR *mindfulness-based*)) OR TITLE-ABS-KEY (((*couple** OR *marital* OR *family* OR *metacognitive* OR *meta-cognitive* OR *grief* OR *bereavement*) W/2 (*therap** OR *counsel**))))) OR (TITLE-ABS-KEY ((*"emotion focus*"* W/1 *therap**)))) AND (((TITLE-ABS-KEY (*pregnancy* W/2 *loss*) OR TITLE-ABS-KEY (*miscarriage** OR *"spontaneous abortion*"* OR *"recurrent abortion"* OR *stillbirth** OR *still-birth** OR *stillborn** OR *still-born**) OR TITLE-ABS-KEY ((*infant** W/2 (*loss** OR *death** OR *demise**))))) OR ((TITLE-ABS-KEY (((*perinatal* OR *prenatal* OR *antenatal* OR *peri-natal* OR *pre-natal* OR *ante-natal* OR *postnatal* OR *post-natal*) W/2 (*loss** OR *death** OR *demise**))) OR TITLE-ABS-KEY (((*fetal* OR *foetal* OR *fetus** OR *foetus** OR *neonatal* OR *neo-natal* OR *newborn** OR *new-born**) W/2 (*loss** OR *death** OR *demise**))) OR TITLE-ABS-KEY (((*intrapartum* OR *intra-partum* OR *antepartum* OR *ante-partum* OR *intrauterine* OR *intra-uterine* OR *in-utero* OR *inutero*) W/2 (*loss** OR *death** OR *demise**))))))

APPENDIX D: PRISMA CHECKLIST

Topic	No.	Item	Location where item is reported
TITLE			
Title: Psychotherapeutic Interventions to Decrease Psychological Distress in Women after Perinatal Loss: A Systematic Review and Meta-Analysis.	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	Based on the PRISMA 2020 for Abstracts checklist: Provide a structured summary including, as applicable: background (objectives); methods (eligibility criteria, information sources, risk of bias, synthesis of results), results (included studies, synthesis of results), discussion (limitations of evidence, interpretation), other (funding, registration).	2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	4-7
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	7
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the synthesis.	8-9
Information sources	6	Specify all databases, registers, websites, organizations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	8
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Appendix A Appendix B

Topic	No.	Item	Location where item is reported
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	10-11
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	11
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	10 Appendix C
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	9-10 Appendix C
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	11
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	12
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item 5)).	12-13
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	12
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	12
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	12-13
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	13
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	13

Topic	No.	Item	Location where item is reported
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	13
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	NA
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	13-15
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	14
Study characteristics	17	Cite each included study and present its characteristics.	16-20 26-27
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	27-28
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate, and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Appendix D Appendix E Appendix F
Results of synthesis	20a	For each synthesis, briefly summarize the characteristics and risk of bias among contributing studies.	38-41
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	29-38
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	29-38
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	34 Appendix G
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	42-48

Topic	No.	Item	Location where item is reported
Discussion	23b	Discuss any limitations of the evidence included in the review.	48-50
	23c	Discuss any limitations of the review processes used.	48-50
	23d	Discuss implications of the results for practice, policy, and future research.	47-48 50
Other information	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	3 7
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	7
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	8 10-11
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	52
Competing interests	26	Declare any competing interests of review authors.	53
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	52-53

(Page et al., 2020)

APPENDIX E: UPDATED SEARCH STRATEGY 2020

Database: APA PsycInfo: 1806 to December Week 1, 2020

Search Strategy:

#	Searches	Results
1	exp SPONTANEOUS ABORTION/	847
2	(Infant* adj2 (loss* or death* or demise*)).mp.	1683
3	(Pregnancy adj2 loss*).mp.	558
4	miscarriage*.mp.	1261
5	(spontaneous abortion* or recurrent abortion*).mp.	1044
6	(stillbirth* or still-birth* or stillborn* or still-born*).mp.	1001
7	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj2 (loss* or death* or demise*)).mp.	627
8	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj2 (loss* or death* or demise*)).mp.	861
9	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj2 (loss* or death* or demise*)).mp.	85
10	or/1-9	5169
11	exp COUNSELING/	78017
12	exp PSYCHOTHERAPY/	205004
13	exp Cognitive Behavior Therapy/	22293
14	exp Cognitive Therapy/	13547
15	exp Behavior Therapy/	20783
16	exp Interpersonal Psychotherapy/	1385
17	exp "Acceptance and Commitment Therapy"/	1922
18	exp Dialectical Behavior Therapy/	1359
19	exp Couples Therapy/	4550
20	exp Marriage Counseling/	5229
21	exp Rational Emotive Behavior Therapy/	1827
22	exp Guided Imagery/	750
23	exp MINDFULNESS/	10272

24	exp Family Therapy/	22085
25	counsel*.mp.	129242
26	(psychotherap* or psycho-therap*).mp.	199739
27	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).mp.	44080
28	(acceptance adj1 commitment therap*).mp.	341
29	(acceptance-based adj1 therap*).mp.	78
30	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).mp.	2324
31	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).mp.	55018
32	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).mp.	248
33	Integrative Behavio* Couple* Therap*.mp.	138
34	((grief or bereavement) adj2 (therap* or counsel*)).mp.	1294
35	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).mp.	10
36	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).mp.	349
37	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).mp.	2879
38	guided imagery.mp.	1574
39	(mindfulness or mindfulness-based).mp.	15318
40	((couple* or marital or family) adj2 (therap* or counsel*)).mp.	37387
41	(emotion focus* adj1 therap*).mp.	871
42	(IPT or CBT).mp.	15534
43	therap*.tw,id.	421900
44	or/11-43	658488
45	10 and 44	825

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily: 1946 to December 15, 2020

Search Strategy:

#	Searches	Results
1	*Abortion, Spontaneous/ or *Abortion, Habitual/	16075
2	*Stillbirth/	3080
3	*Fetal Death/	10026
4	*Perinatal Death/	1070
5	(Infant* adj1 (loss* or death* or demise*)).tw,kf.	9917
6	(Pregnancy adj1 loss*).tw,kf.	7412
7	miscarriage*.tw,kf.	14675
8	(spontaneous abortion* or recurrent abortion*).tw,kf.	11459
9	(stillbirth* or still-birth* or stillborn* or still-born*).tw,kf.	16445
10	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj1 (loss* or death* or demise*)).tw,kf.	6032
11	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj1 (loss* or death* or demise*)).tw,kf.	22868
12	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj1 (loss* or death* or demise*)).tw,kf.	3025
13	or/1-12	85876
14	*Counseling/	16586
15	*Psychotherapy/	36718
16	behavior therapy/ or emotion-focused therapy/ or person-centered psychotherapy/ or psychotherapy, brief/ or psychotherapy, multiple/ or psychotherapy, psychodynamic/ or psychotherapy, rational-emotive/	33295
17	cognitive behavioral therapy/ or "acceptance and commitment therapy"/ or mindfulness/	29513
18	Dialectical Behavior Therapy/	89
19	couples therapy/ or marital therapy/	2178
20	Family Therapy/	8886
21	counsel*.ti.	20711

22	(psychotherap* or psycho-therap*).tw,kf.	47724
23	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).tw,kf.	23393
24	(acceptance adj1 commitment therap*).tw,kf.	40
25	(acceptance-based adj1 therap*).tw,kf.	26
26	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).tw,kf.	899
27	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).tw,kf.	26352
28	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).tw,kf.	45
29	Integrative Behavio* Couple* Therap*.tw,kf.	31
30	((grief or bereavement) adj2 (therap* or counsel*)).tw,kf.	427
31	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).tw,kf.	10
32	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).tw,kf.	217
33	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).tw,kf.	2830
34	guided imagery.tw,kf.	760
35	(mindfulness or mindfulness-based).tw,kf.	8356
36	((couple* or marital or family) adj2 (therap* or counsel*)).tw,kf.	8957
37	(emotion focus* adj1 therap*).tw,kf.	126
38	(IPT or CBT).tw,kf.	13913
39	or/14-38	176892
40	13 and 39	592

Database(s): Embase**:** 1974 to December 16, 2020

Search Strategy:

#	Searches	Results
1	*spontaneous abortion/	10254
2	*recurrent abortion/	3775
3	*stillbirth/ or *perinatal death/ or *fetus death/	10936
4	(Infant* adj1 (loss* or death* or demise*)).tw,kw.	11776
5	(Pregnancy adj1 loss*).tw,kw.	11815
6	miscarriage*.tw,kw.	24910
7	(spontaneous abortion* or recurrent abortion*).tw,kw.	15787
8	(stillbirth* or still-birth* or stillborn* or still-born*).tw,kw.	22068
9	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj1 (loss* or death* or demise*)).tw,kw.	7917
10	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj1 (loss* or death* or demise*)).tw,kw.	30083
11	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj1 (loss* or death* or demise*)).tw,kw.	4319
12	or/1-11	108167
13	*counseling/	16688
14	*psychotherapy/	39828
15	couple therapy/ or emotion-focused therapy/ or family therapy/ or guided imagery/ or marital therapy/ or mindfulness/ or rational emotive behavior therapy/	26689
16	cognitive behavioral therapy/	13800
17	*cognitive therapy/ or "acceptance and commitment therapy"/ or *behavior therapy/	29552
18	counsel*.ti.	25663
19	(psychotherap* or psycho-therap*).tw,kw.	62315
20	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).tw,kw.	34509
21	(acceptance adj1 commitment therap*).tw,kw.	60
22	(acceptance-based adj1 therap*).tw,kw.	39
23	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).tw,kw.	1247

24	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).tw,kw.	38616
25	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).tw,kw.	59
26	Integrative Behavio* Couple* Therap*.tw,kw.	33
27	((grief or bereavement) adj2 (therap* or counsel*)).tw,kw.	580
28	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).tw,kw.	13
29	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).tw,kw.	268
30	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).tw,kw.	4176
31	guided imagery.tw,kw.	1116
32	(mindfulness or mindfulness-based).tw,kw.	11149
33	((couple* or marital or family) adj2 (therap* or counsel*)).tw,kw.	13464
34	(emotion focus* adj1 therap*).tw,kw.	158
35	(IPT or CBT).tw,kw.	20602
36	or/13-35	203596
37	12 and 36	840

Database: EBM Reviews - Cochrane Central Register of Controlled Trials: November 2020

Search Strategy:

#	Searches	Results
1	*Abortion, Spontaneous/ or *Abortion, Habitual/	63
2	*Stillbirth/	0
3	*Fetal Death/	0
4	*Perinatal Death/	0
5	(Infant* adj1 (loss* or death* or demise*)).tw,kw.	421
6	(Pregnancy adj1 loss*).tw,kw.	791
7	miscarriage*.tw,kw.	2191
8	(spontaneous abortion* or recurrent abortion*).tw,kw.	1607
9	(stillbirth* or still-birth* or stillborn* or still-born*).tw,kw.	1054
10	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) adj1 (loss* or death* or demise*)).tw,kw.	554
11	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) adj1 (loss* or death* or demise*)).tw,kw.	1825
12	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) adj1 (loss* or death* or demise*)).tw,kw.	150
13	or/1-12	6276
14	*Counseling/	0
15	*Psychotherapy/	0
16	behavior therapy/ or emotion-focused therapy/ or person-centered psychotherapy/ or psychotherapy, brief/ or psychotherapy, multiple/ or psychotherapy, psychodynamic/ or psychotherapy, rational-emotive/	5664
17	cognitive behavioral therapy/ or "acceptance and commitment therapy"/ or mindfulness/	8907
18	Dialectical Behavior Therapy/	18
19	couples therapy/ or marital therapy/	237
20	Family Therapy/	945
21	counsel*.ti.	4889
22	(psychotherap* or psycho-therap*).tw,kw.	9174

23	(cognitive adj2 (therap* or psychotherap* or psycho-therap*)).tw,kw.	17984
24	(acceptance adj1 commitment therap*).tw,kw.	972
25	(acceptance-based adj1 therap*).tw,kw.	15
26	(dialectical adj2 (therap* or psychotherap* or psycho-therap*)).tw,kw.	415
27	((behavior* or behaviour* or interpersonal or inter-personal) adj1 (therap* or psychotherap* or psycho-therap*)).tw,kw.	17437
28	(Functional Analytic adj (psychothera* or psycho-therap* or therap*)).tw,kw.	14
29	Integrative Behavio* Couple* Therap*.tw,kw.	15
30	((grief or bereavement) adj2 (therap* or counsel*)).tw,kw.	138
31	(complicated grief adj (therap* or psycotherap* or psycho-therap*)).tw,kw.	7
32	((metacognitive or meta-cognitive) adj2 (therap* or counsel*)).tw,kw.	163
33	(rational adj1 (emotive* or therap* or psychotherap* or psycho-therap*)).tw,kw.	265
34	guided imagery.tw,kw.	667
35	(mindfulness or mindfulness-based).tw,kw.	5482
36	((couple* or marital or family) adj2 (therap* or counsel*)).tw,kw.	2760
37	(emotion focus* adj1 therap*).tw,kw.	61
38	(IPT or CBT).tw,kw.	9032
39	or/14-38	48580
40	13 and 39	146

Database: SCOPUS: December 17, 2020

Search Strategy:

((TITLE-ABS-KEY ((*psychotherap** OR *psycho-therap**))) OR (TITLE-ABS-KEY ((*cognitive* W/2 (*therap** OR *psychotherap** OR *psycho-therap**)))) OR (TITLE-ABS-KEY ((*acceptance* W/1 *commitment* AND *therap**) OR (*acceptance-based* W/1 *therap**))) OR (TITLE-ABS-KEY ((*"complicated grief"* OR *"Functional Analytic"* OR *behavior** OR *behaviour** OR *interpersonal* OR *inter-personal* OR *dialectical*) W/1 (*therap** OR *psycotherap** OR *psycho-therap**))) OR ((TITLE-ABS-KEY ((*rational* W/1 (*emotive** OR *therap** OR *psychotherap** OR *psycho-therap**))) OR TITLE-ABS-KEY (*"guided imagery"* OR *"Integrative Behavio* Couple* Therap*"*) OR TITLE-ABS-KEY ((*mindfulness* OR *mindfulness-based*)) OR TITLE-ABS-KEY (((*couple** OR *marital* OR *family* OR *metacognitive* OR *meta-cognitive* OR *grief* OR *bereavement*) W/2 (*therap** OR *counsel**))))) OR (TITLE-ABS-KEY ((*"emotion focus*"* W/1 *therap**)))) AND (((TITLE-ABS-KEY (*pregnancy* W/2 *loss*) OR TITLE-ABS-KEY (*miscarriage** OR *"spontaneous abortion*"* OR *"recurrent abortion"* OR *stillbirth** OR *still-birth** OR *stillborn** OR *still-born**) OR TITLE-ABS-KEY ((*infant** W/2 (*loss** OR *death** OR *demise**))))) OR ((TITLE-ABS-KEY (((*perinatal* OR *prenatal* OR *antenatal* OR *peri-natal* OR *pre-natal* OR *ante-natal* OR *postnatal* OR *post-natal*) W/2 (*loss** OR *death** OR *demise**))) OR TITLE-ABS-KEY (((*fetal* OR *foetal* OR *fetus** OR *foetus** OR *neonatal* OR *neo-natal* OR *newborn** OR *new-born**) W/2 (*loss** OR *death** OR *demise**))) OR TITLE-ABS-KEY (((*intrapartum* OR *intra-partum* OR *antepartum* OR *ante-partum* OR *intrauterine* OR *intra-uterine* OR *in-utero* OR *inutero*) W/2 (*loss** OR *death** OR *demise**))))))

Database: CINAHL Plus with Full Text

Search Strategy:

#	Query	Results
S1	(MM "Abortion, Spontaneous") OR (MM "Abortion, Habitual")	3,464
S2	(MM "Perinatal Death")	4,596
S3	Pregnancy N2 Loss	2,372
S4	miscarriage* or "spontaneous abortion*" or "recurrent abortion" OR stillbirth* or still-birth* or stillborn* or still-born*	10,115
S5	(Infant* N2 (loss* or death* or demise*))	6,250
S6	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) N2 (loss* or death* or demise*))	9,627
S7	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) N2 (loss* or death* or demise*))	6,538
S8	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) N2 (loss* or death* or demise*))	1,411
S9	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8	27,667
S10	(MM "Counseling")	15,306
S11	(MM "Psychotherapy")	13,005
S12	(MH "Guided Imagery") OR (MH "Psychotherapy, Brief") OR (MH "Psychotherapy, Psychodynamic")	4,603
S13	(MM "Behavior Therapy") OR (MM "Cognitive Therapy")	18,034
S14	(MH "Acceptance and Commitment Therapy") OR (MH "Mindfulness")	5,806
S15	(MH "Couples Counseling")	2,523
S16	TI counsel*	17,692
S17	(psychotherap* or psycho-therap*)	41,074
S18	(cognitive N2 (therap* or psychotherap* or psycho-therap*))	24,803
S19	(acceptance N1 commitment therap*) or (acceptance-based N1 therap*)	937
S20	("complicated grief" or "Functional Analytic" or behavior* or behaviour* or interpersonal or inter-personal or dialectical) N1 (therap* or psycotherap* or psycho-therap*)	26,048
S21	(rational N1 (emotive* or therap* or psychotherap* or psycho-therap*))	555
S22	"guided imagery" or "Integrative Behavio* Couple* Therap*"	3,083

S23	(mindfulness or mindfulness-based)	8,260
S24	((couple* or marital or family or metacognitive or meta-cognitive or grief or bereavement) N2 (therap* or counsel*))	12,426
S25	(emotion focus* N1 therap*)	300
S26	S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25	114,689
S27	S9 AND S26	317

Database: Social Work Abstracts

Search Strategy:

	Query	Results
S1	Pregnancy N2 Loss	17
S2	miscarriage* or "spontaneous abortion*" or "recurrent abortion" OR stillbirth* or still-birth* or stillborn* or still-born*	47
S3	(Infant* N2 (loss* or death* or demise*))	50
S4	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) N2 (loss* or death* or demise*))	11
S5	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) N2 (loss* or death* or demise*))	21
S6	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) N2 (loss* or death* or demise*))	1
S7	S1 OR S2 OR S3 OR S4 OR S5 OR S6	112
S8	counsel*	2,780
S9	(psychotherap* or psycho-therap*)	8,449
S10	(cognitive N2 (therap* or psychotherap* or psycho-therap*))	417
S11	(acceptance N1 commitment therap*) or (acceptance-based N1 therap*)	26
S12	("complicated grief" or "Functional Analytic" or behavior* or behaviour* or interpersonal or inter-personal or dialectical) N1 (therap* or psycotherap* or psycho-therap*)	482
S13	(rational N1 (emotive* or therap* or psychotherap* or psycho-therap*))	27
S14	"guided imagery" or "Integrative Behavio* Couple* Therap*"	13
S15	(mindfulness or mindfulness-based)	122
S16	((couple* or marital or family or metacognitive or meta-cognitive or grief or bereavement) N2 (therap* or counsel*))	2,720
S17	(emotion focus* N1 therap*)	13
S18	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17	13,017
S19	S7 AND S18	27

Database: Family & Society Studies Worldwide

Search Strategy:

#	Query	Results
S1	Pregnancy N2 Loss	1,062
S2	miscarriage* or "spontaneous abortion*" or "recurrent abortion" OR stillbirth* or still-birth* or stillborn* or still-born*	5,309
S3	(Infant* N2 (loss* or death* or demise*))	3,771
S4	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) N2 (loss* or death* or demise*))	1,408
S5	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) N2 (loss* or death* or demise*))	3,099
S6	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) N2 (loss* or death* or demise*))	361
S7	S1 OR S2 OR S3 OR S4 OR S5 OR S6	11,886
S8	TI counsel*	12,111
S9	(psychotherap* or psycho-therap*)	15,173
S10	(cognitive N2 (therap* or psychotherap* or psycho-therap*))	7,328
S11	(acceptance N1 commitment therap*) or (acceptance-based N1 therap*)	319
S12	("complicated grief" or "Functional Analytic" or behavior* or behaviour* or interpersonal or inter-personal or dialectical) N1 (therap* or psycotherap* or psycho-therap*)	8,307
S13	(rational N1 (emotive* or therap* or psychotherap* or psycho-therap*))	235
S14	"guided imagery" or "Integrative Behavio* Couple* Therap*"	243
S15	(mindfulness or mindfulness-based)	1,882
S16	((couple* or marital or family or metacognitive or meta-cognitive or grief or bereavement) N2 (therap* or counsel*))	19,689
S17	(emotion focus* N1 therap*)	141
S18	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17	52,637
S19	S7 AND S18	166

Database: Family Studies Abstracts

Search Strategy:

#	Query	Results
S1	Pregnancy N2 Loss	69
S2	miscarriage* or "spontaneous abortion*" or "recurrent abortion" OR stillbirth* or still-birth* or stillborn* or still-born*	252
S3	(Infant* N2 (loss* or death* or demise*))	204
S4	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) N2 (loss* or death* or demise*))	104
S5	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) N2 (loss* or death* or demise*))	190
S6	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) N2 (loss* or death* or demise*))	47
S7	S1 OR S2 OR S3 OR S4 OR S5 OR S6	539
S8	counsel*	8,972
S9	(psychotherap* or psycho-therap*)	12,541
S10	(cognitive N2 (therap* or psychotherap* or psycho-therap*))	704
S11	(acceptance N1 commitment therap*) or (acceptance-based N1 therap*)	43
S12	("complicated grief" or "Functional Analytic" or behavior* or behaviour* or interpersonal or inter-personal or dialectical) N1 (therap* or psycotherap* or psycho-therap*)	2,676
S13	(rational N1 (emotive* or therap* or psychotherap* or psycho-therap*))	34
S14	"guided imagery" or "Integrative Behavio* Couple* Therap*"	25
S15	(mindfulness or mindfulness-based)	187
S16	((couple* or marital or family or metacognitive or meta-cognitive or grief or bereavement) N2 (therap* or counsel*))	22,771
S17	(emotion focus* N1 therap*)	135
S18	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17	29,105
S19	S7 AND S18	65

Database: Academic Search Complete

Search Strategy:

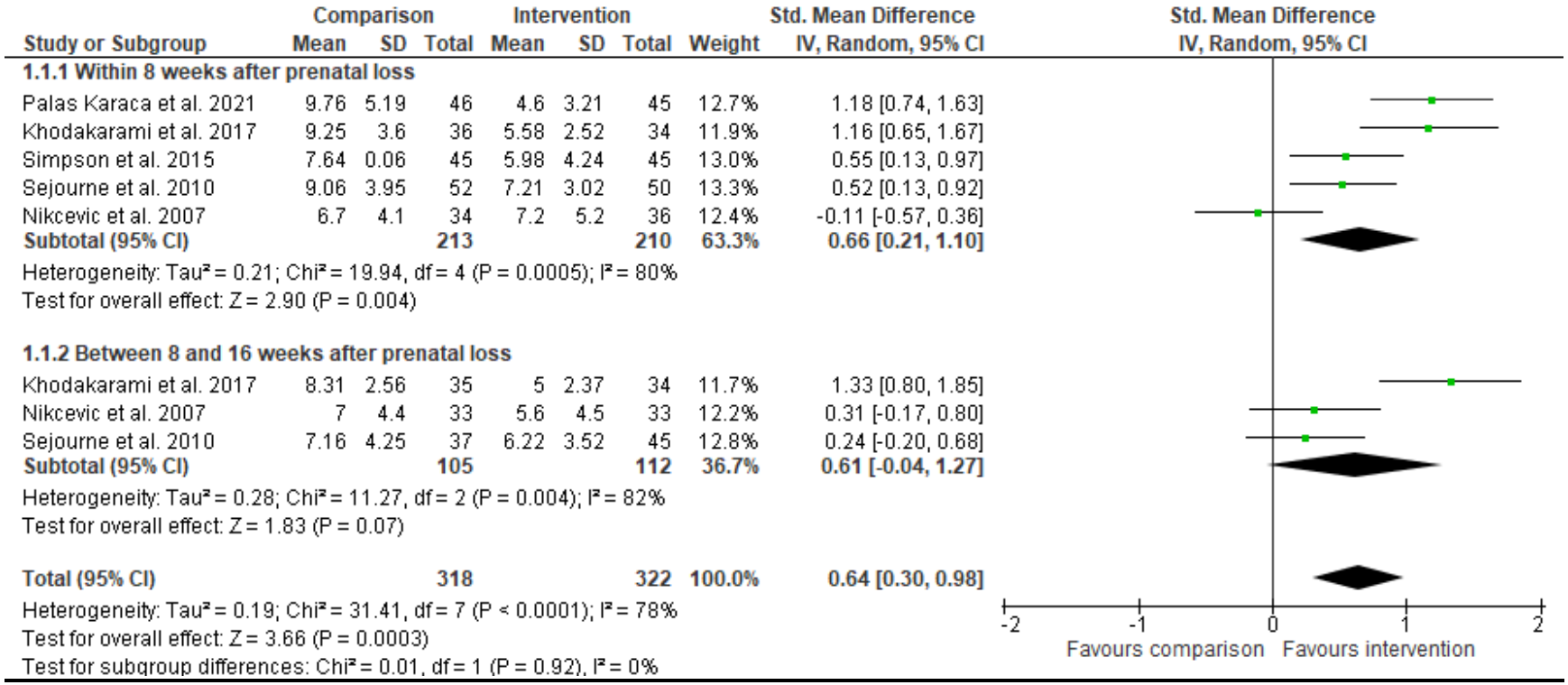
#	Query	Results
S1	Pregnancy N2 Loss	6,556
S2	miscarriage* or "spontaneous abortion*" or "recurrent abortion" OR stillbirth* or still-birth* or stillborn* or still-born*	26,665
S3	(Infant* N2 (loss* or death* or demise*))	9,911
S4	((perinatal or prenatal or antenatal or peri-natal or pre-natal or ante-natal or postnatal or post-natal) N2 (loss* or death* or demise*))	6,370
S5	((fetal or foetal or fetus* or foetus* or neonatal or neo-natal or newborn* or new-born*) N2 (loss* or death* or demise*))	15,375
S6	((intrapartum or intra-partum or antepartum or ante-partum or intrauterine or intra-uterine or in-utero or inutero) N2 (loss* or death* or demise*))	4,637
S7	S1 OR S2 OR S3 OR S4 OR S5 OR S6	48,753
S8	TI counsel*	27,608
S9	(psychotherap* or psycho-therap*)	139,556
S10	(cognitive N2 (therap* or psychotherap* or psycho-therap*))	33,757
S11	(acceptance N1 commitment therap*) or (acceptance-based N1 therap*)	1,732
S12	("complicated grief" or "Functional Analytic" or behavior* or behaviour* or interpersonal or inter-personal or dialectical) N1 (therap* or psycotherap* or psycho-therap*)	37,829
S13	(rational N1 (emotive* or therap* or psychotherap* or psycho-therap*))	1,873
S14	"guided imagery" or "Integrative Behavio* Couple* Therap*"	687
S15	(mindfulness or mindfulness-based)	11,045
S16	((couple* or marital or family or metacognitive or meta-cognitive or grief or bereavement) N2 (therap* or counsel*))	28,256
S17	(emotion focus* N1 therap*)	677
S18	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17	210,600
S19	S7 AND S18	426

APPENDIX F: DATA EXTRACTION

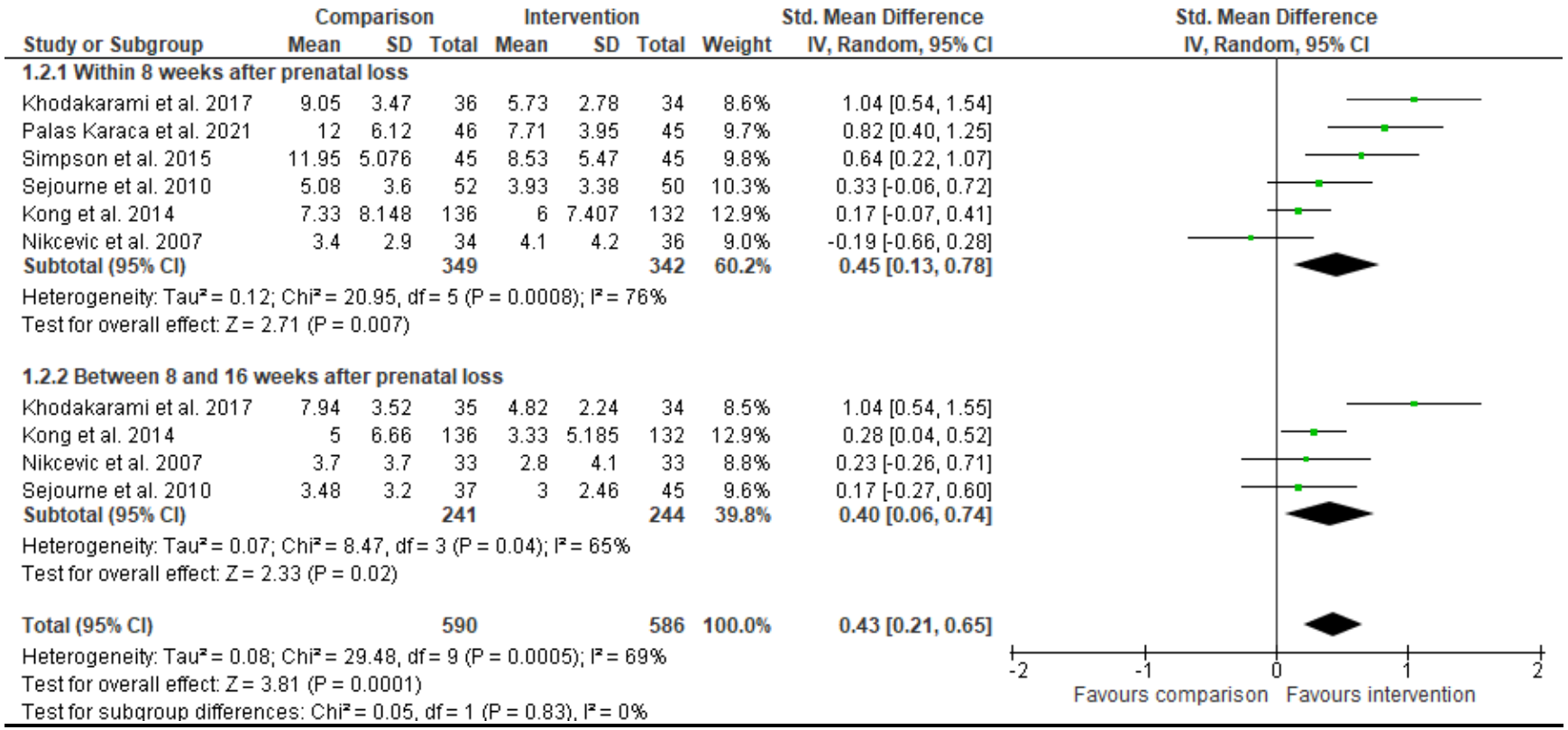
Category	Data to be extracted
Study characteristics	First author, year, country, study, objective, and study design
Recruitment	Recruitment strategy, sample size, group assignment: unit (individual, group, community), method (non/randomization), and bias minimization
Participant details	Eligibility criteria, demographics, mental illness history/diagnosis, perinatal loss, (definition, type, time since loss, previous/repeated loss), pregnancy status, participation, and attrition
Measurement	Tool used, timing and frequency of assessments, method and setting of data collection, data collectors, (who, training), confounders, and reliability/validity estimate for measurement tool
Intervention characteristics	Type, unit (individual, group), content of psychotherapeutic intervention (structure, objectives, goals), facilitator and credentials, delivery method (in-person, phone, online, distance), setting, timing of intervention initiation, number, frequency, length and duration of intervention, adherence (activities to enhance adherence, assessment of adherence or fidelity), materials (physical or information), tailoring, modifications (unplanned), and comparison group intervention
Outcomes	Duration and severity of depressive, anxiety, grief, posttraumatic stress symptoms, changes in perception of support and care, coping, and adjustment
Analysis	Unit of analysis, statistical and imputation methods
Results	Participant flow (enrollment, dropout, analysis, protocol deviations), clinical implications

APPENDIX G: FOREST PLOTS OF EFFECT ON SYMPTOMS RELATIVE TO TIME AFTER PRENATAL LOSS

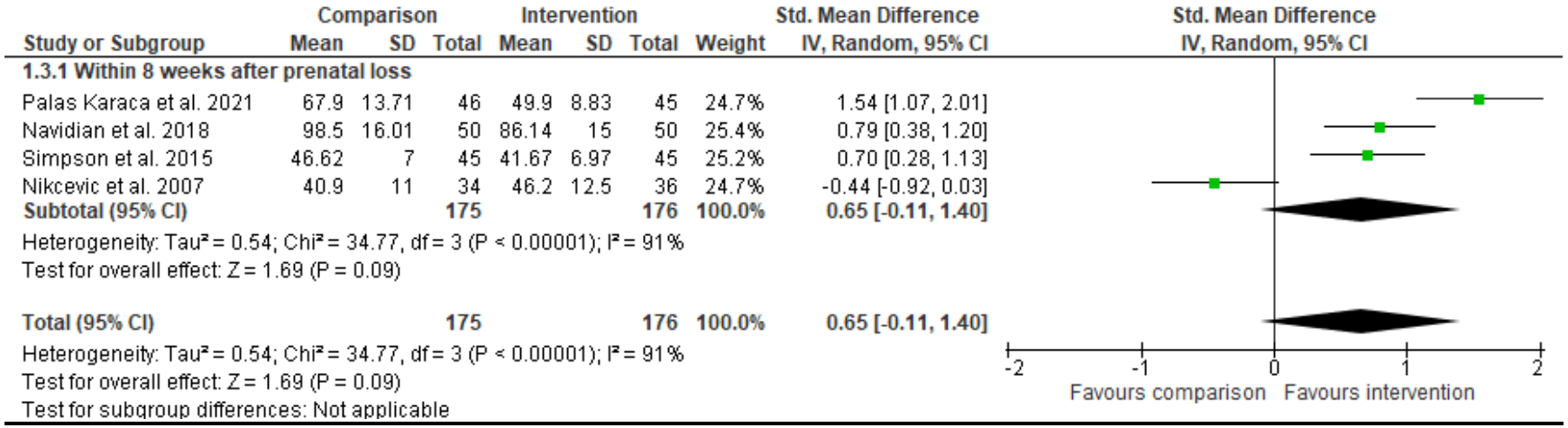
G1: Anxiety symptoms



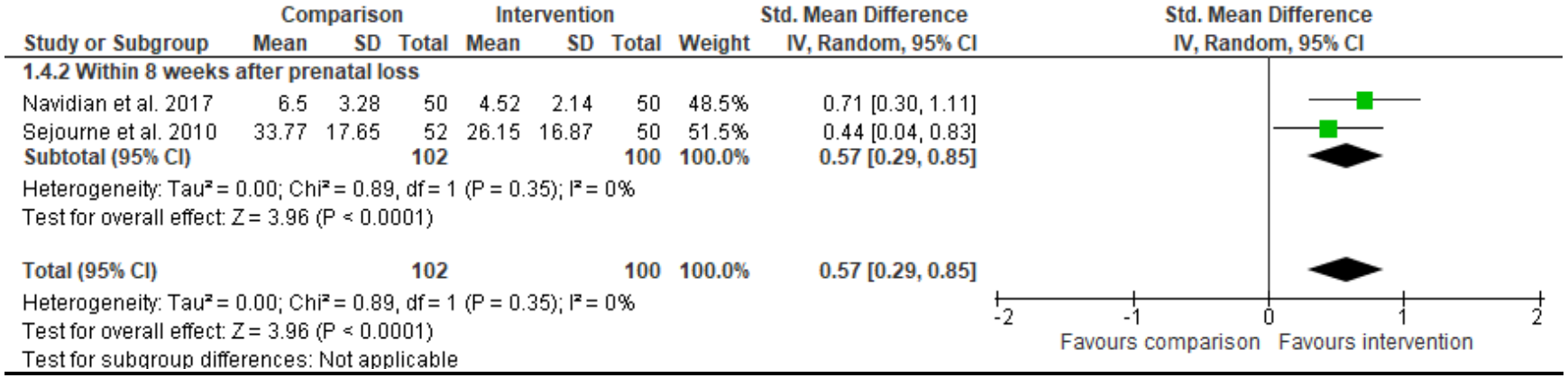
G2: Depressive symptoms



G3: Grief symptoms

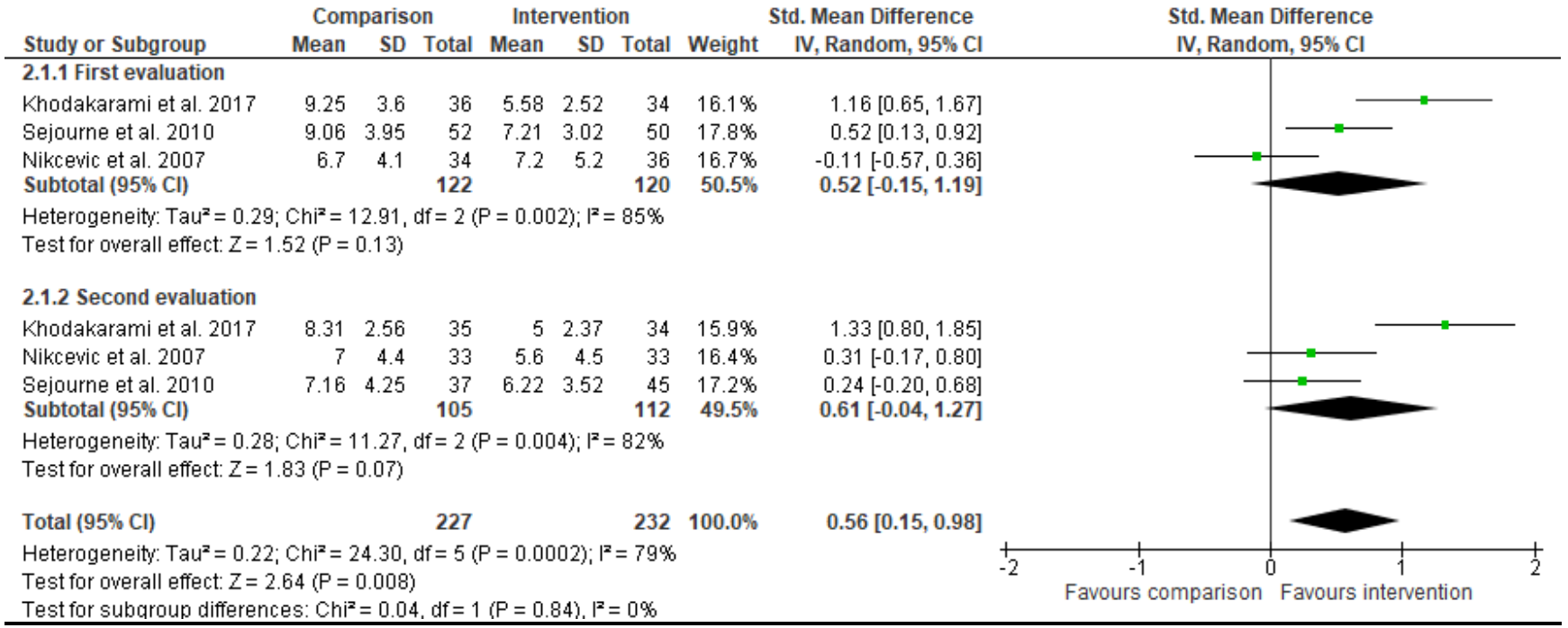


G4: PTS symptoms

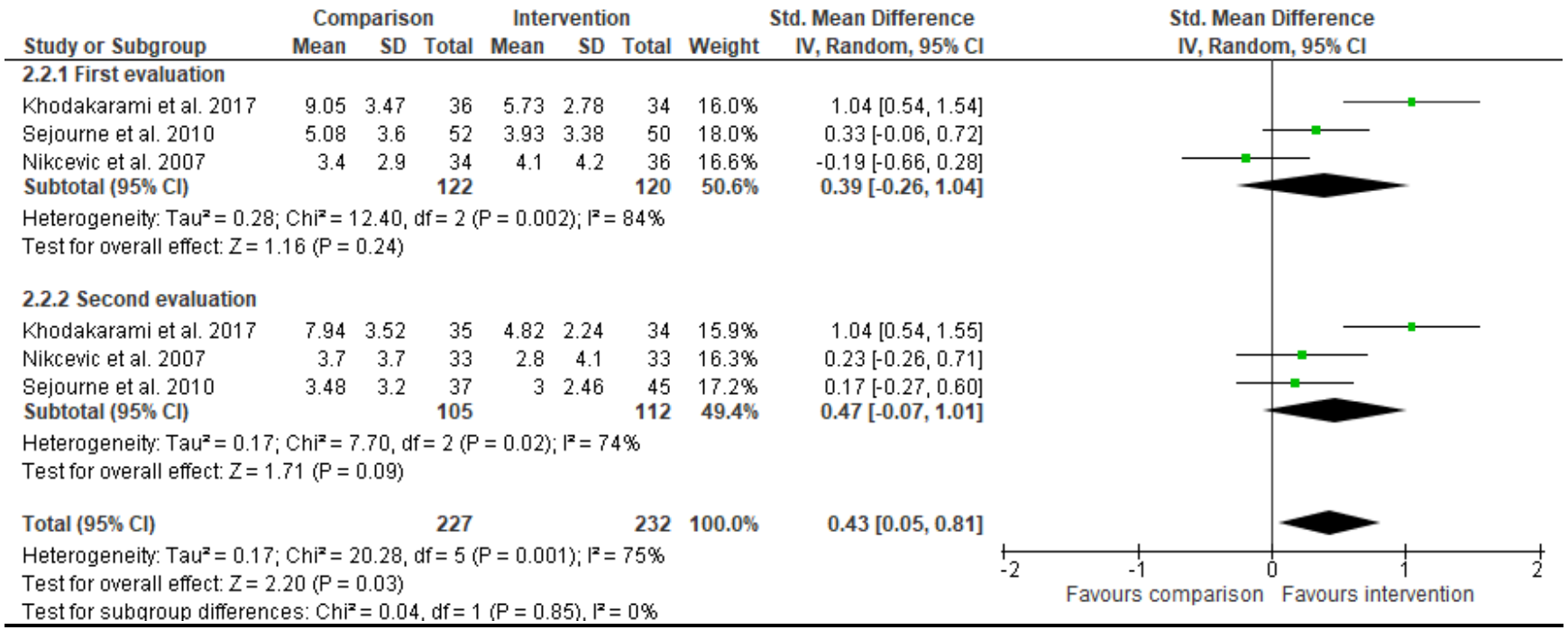


APPENDIX H: FOREST PLOTS OF EFFECT ON SYMPTOMS RELATIVE TO TYPE OF PSYCHOTHERAPEUTIC INTERVENTION

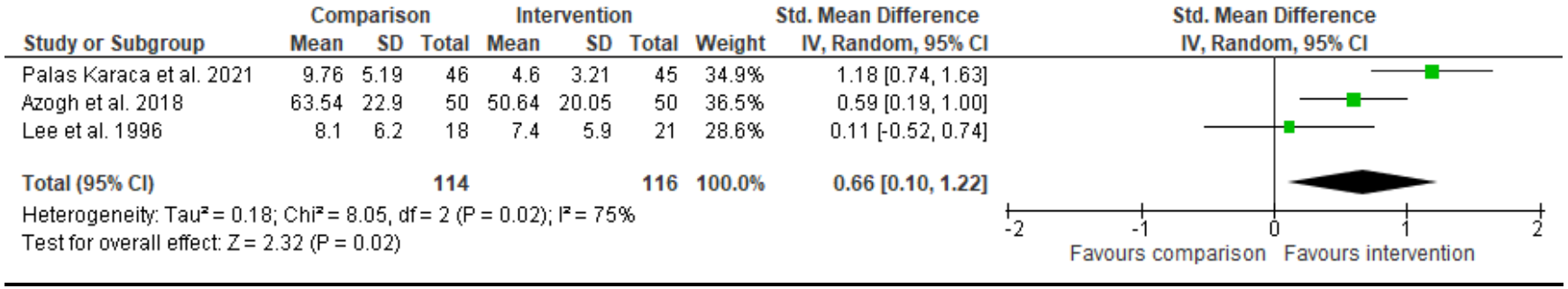
H1: Cognitive behavioral therapy: Anxiety symptoms



H2: Cognitive behavioral therapy: Depressive symptoms



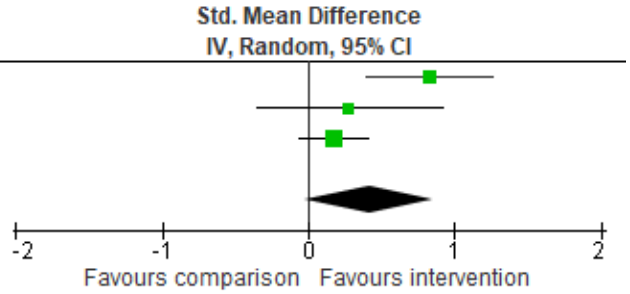
H3: Supportive intervention: Anxiety symptoms



H4. Supportive intervention: Depressive symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Palas Karaca et al. 2021	12	6.12	46	7.71	3.95	45	33.3%	0.82 [0.40, 1.25]
Lee et al. 1996	4.8	7	18	3.2	4.2	21	24.3%	0.28 [-0.36, 0.91]
Kong et al. 2014	7.33	8.148	136	6	7.407	132	42.4%	0.17 [-0.07, 0.41]
Total (95% CI)			**200**			**198**	**100.0%**	**0.41 [-0.03, 0.86]**

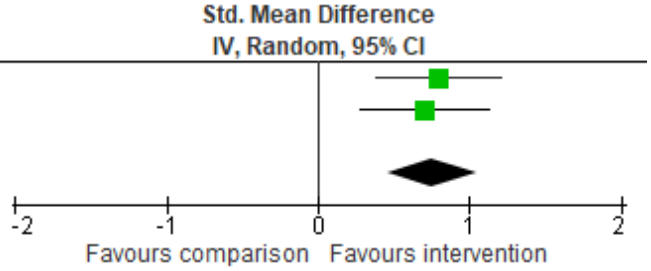
Heterogeneity: Tau² = 0.10; Chi² = 6.82, df = 2 (P = 0.03); I² = 71%
Test for overall effect: Z = 1.83 (P = 0.07)



H5. Bereavement or grief counselling intervention: Grief symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Navidian et al. 2018	98.5	16.01	50	86.14	15	50	52.2%	0.79 [0.38, 1.20]
Simpson et al. 2015	46.62	7	45	41.67	6.97	45	47.8%	0.70 [0.28, 1.13]
Total (95% CI)			**95**			**95**	**100.0%**	**0.75 [0.45, 1.04]**

Heterogeneity: Tau² = 0.00; Chi² = 0.09, df = 1 (P = 0.77); I² = 0%
Test for overall effect: Z = 4.98 (P < 0.00001)



APPENDIX I: SENSITIVITY ANALYSIS

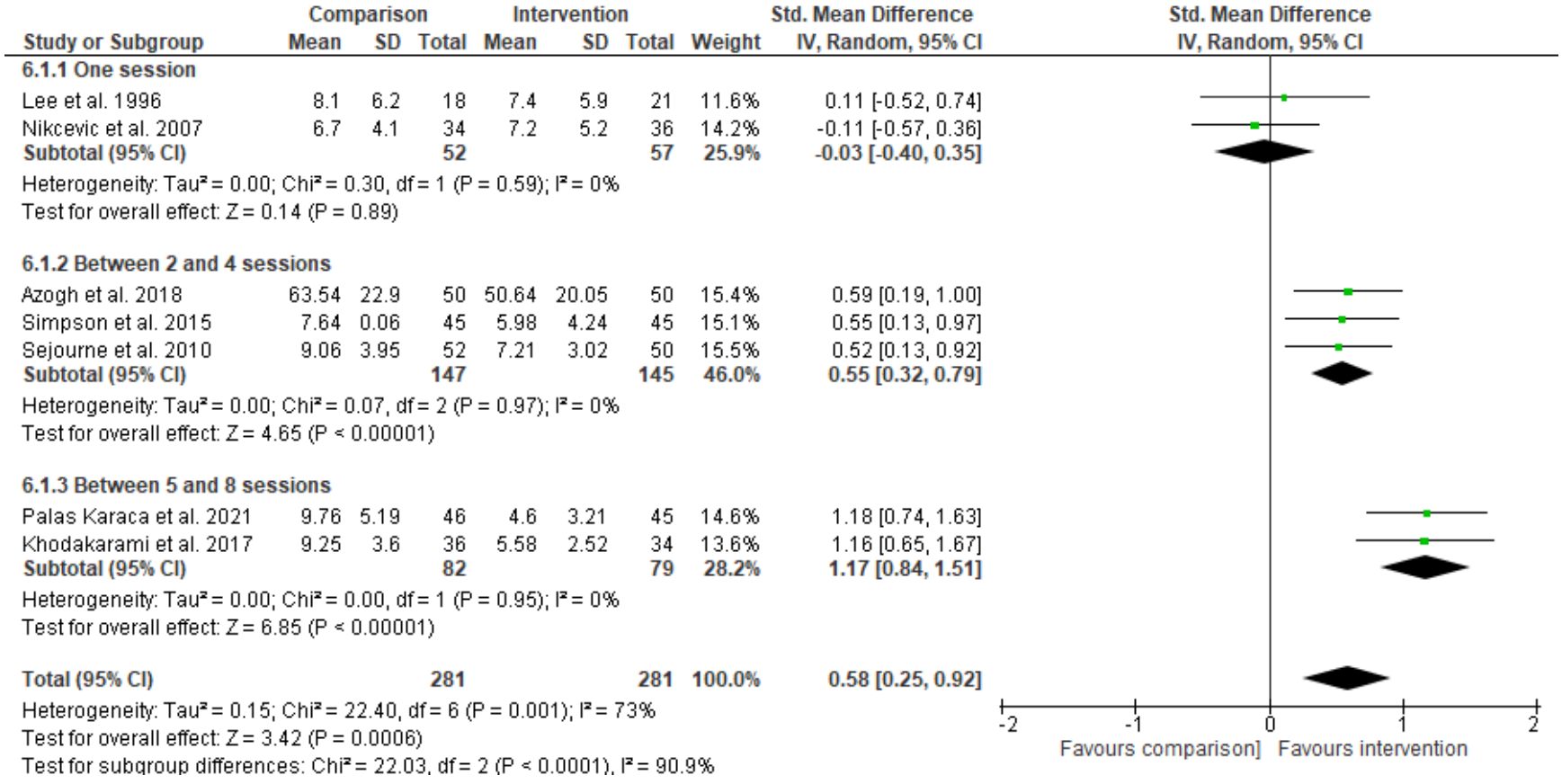
Effect on Symptoms Relative to Time After Prenatal Loss			
		Hedges' g (95% CI)	
Symptom	k	One outcome measure removed	All outcome measures combined
Within 8 weeks after prenatal loss			
Anxiety	5	0.84 (0.47 – 1.20)[a]	0.66 (0.21 – 1.10)[a]
Depression	6	0.57 (0.24 – 0.89)[a]	0.45 (0.13 – 0.78)[a]
Grief	4	0.63 (-0.45 – 1.71)[b]	0.65 (-0.11 – 1.40)[b]
PTS	2	0.44 (0.04 – 0.83)[a]	0.57 (0.29 – 0.85)[a]
Between 8 and 16 weeks after prenatal loss			
Anxiety	3	0.77 (-0.29 – 1.84)[b]	0.61 (-0.04 – 1.27)[b]
Depression	4	0.46 (0.01 – 0.92)[a]	0.40 (0.06 – 0.74)[a]
Grief	1	NA	NA
PTS	1	NA	NA
Effect on Symptoms Relative to Type of Psychotherapeutic Intervention			
		Hedges' g (95% CI)	
Symptom	k	One outcome measure removed	All outcome measures combined
CBT-based intervention or program (first assessment)			
Anxiety	3	0.52 (-0.72 – 1.77)[b]	0.52 (-0.15 – 1.19)[b]
Depression	3	0.42 (-0.79 – 1.63)[b]	0.39 (-0.26 – 1.04)[b]
Grief	1	NA	NA
PTS	1	NA	NA
CBT-based intervention or program (second assessment)			
Anxiety	3	0.77 (-0.29 – 1.84)[b]	0.61 (-0.04 – 1.27)[b]
Depression	3	0.60 (-0.26 – 1.45)[b]	0.47 (-0.07 – 1.01)[b]
Grief	1	NA	NA
PTS	1	NA	NA
Supportive (psychological debriefing/psychoeducation/Swanson) intervention or program (first assessment)			
Anxiety	3	0.88 (0.30 – 1.46)[a]	0.66 (0.10 – 1.22)[a]
Depression	3	0.47 (-0.17 – 1.11)[b]	0.41 (-0.03 – 0.86)[b]
Grief	1	NA	NA
PTS	0	NA	NA
Bereavement or grief counselling intervention (first assessment)			
Anxiety	1	NA	NA
Depression	1	NA	NA
Grief	2	0.70 (0.28 – 1.13)[a]	0.75 (0.45 – 1.04)[a]
PTS	1	NA	NA
Effect on Symptoms Relative to Number of Psychotherapeutic Sessions			

Symptom	k	Hedges' g (95% CI)	
		One outcome measure removed	All outcome measures combined
One session			
Anxiety	2	-0.11 (-0.57 – 0.36)[b]	-0.03 (-0.40 – 0.35)[b]
Depression	2	-0.19 (-0.66 – 0.28)[b]	-0.01 (-0.45 – 0.44)[b]
Grief	1	NA	NA
PTS	NA	NA	NA
Between 2 and 4 sessions			
Anxiety	3	0.56 (0.28 – 0.84)[a]	0.55 (0.32 – 0.79)[a]
Depression	4	0.44 (0.17 – 0.72)[a]	0.31 (0.09 – 0.53)[a]
Grief	2	0.70 (0.28 – 1.13)[a]	0.75 (0.45 – 1.04)[a]
PTS	2	0.44 (0.04 – 0.83)[a]	0.57 (0.29 – 0.85)[a]
Between 5 and 8 sessions			
Anxiety	2	1.16 (0.65 – 1.67)[a]	1.17 (0.84 – 1.51)[a]
Depression	2	1.04 (0.54 – 1.54)[a]	0.92 (0.59 – 1.24)[a]
Grief	1	NA	NA
PTS	NA	NA	NA

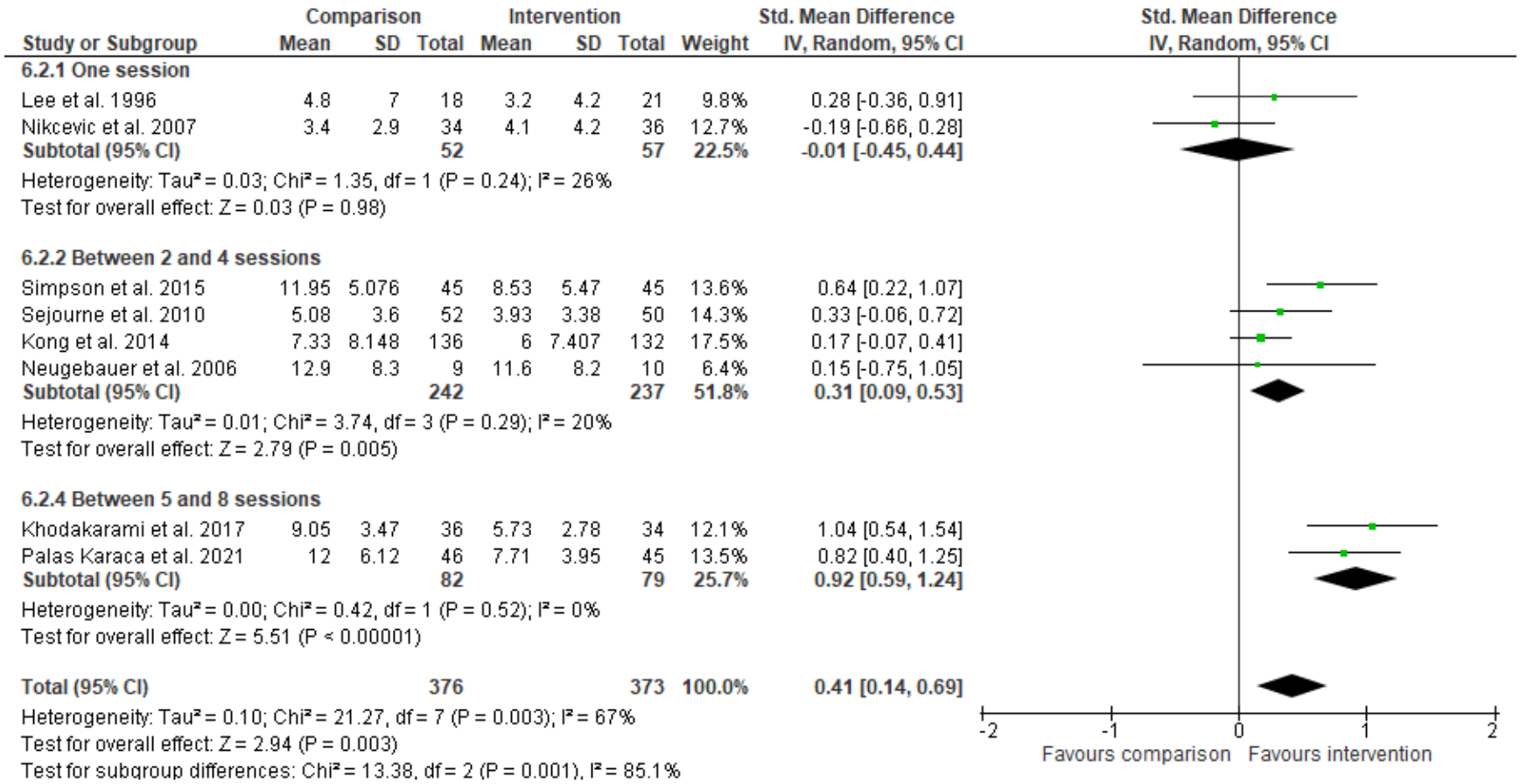
APPENDIX J: FOREST PLOTS OF SUBGROUP ANALYSIS

J1: Forest plots of effect on symptoms relative to the number of psychotherapeutic sessions (based on comparisons at the first evaluation timepoint).

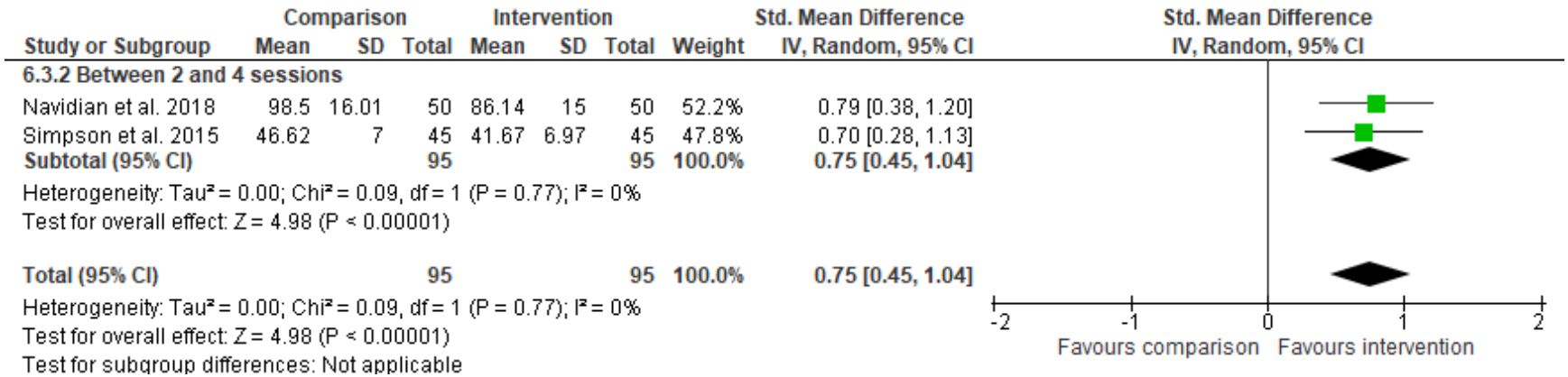
J1.a: Anxiety symptoms



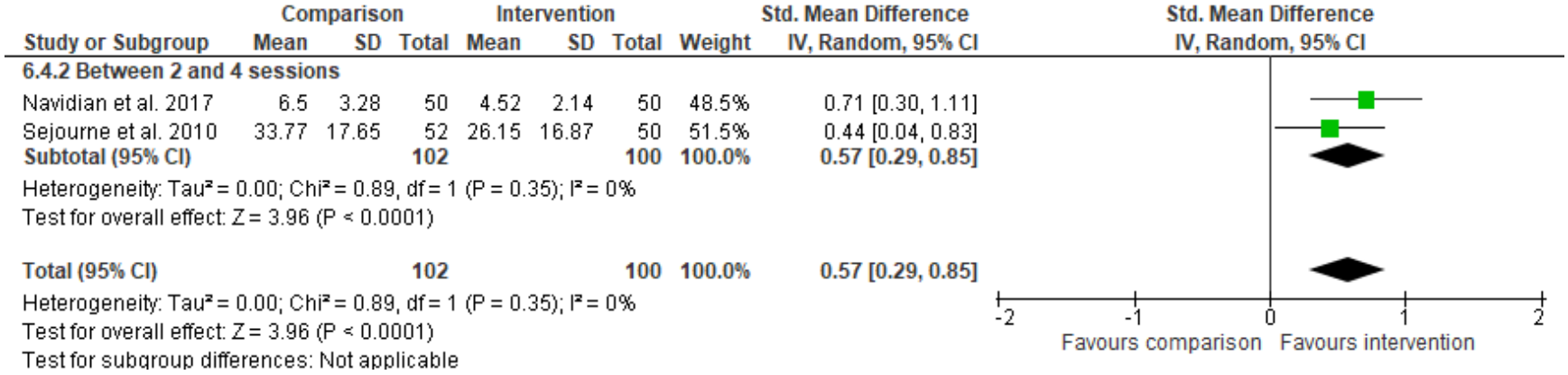
J1.b: Depressive symptoms



J1.c: Grief symptoms

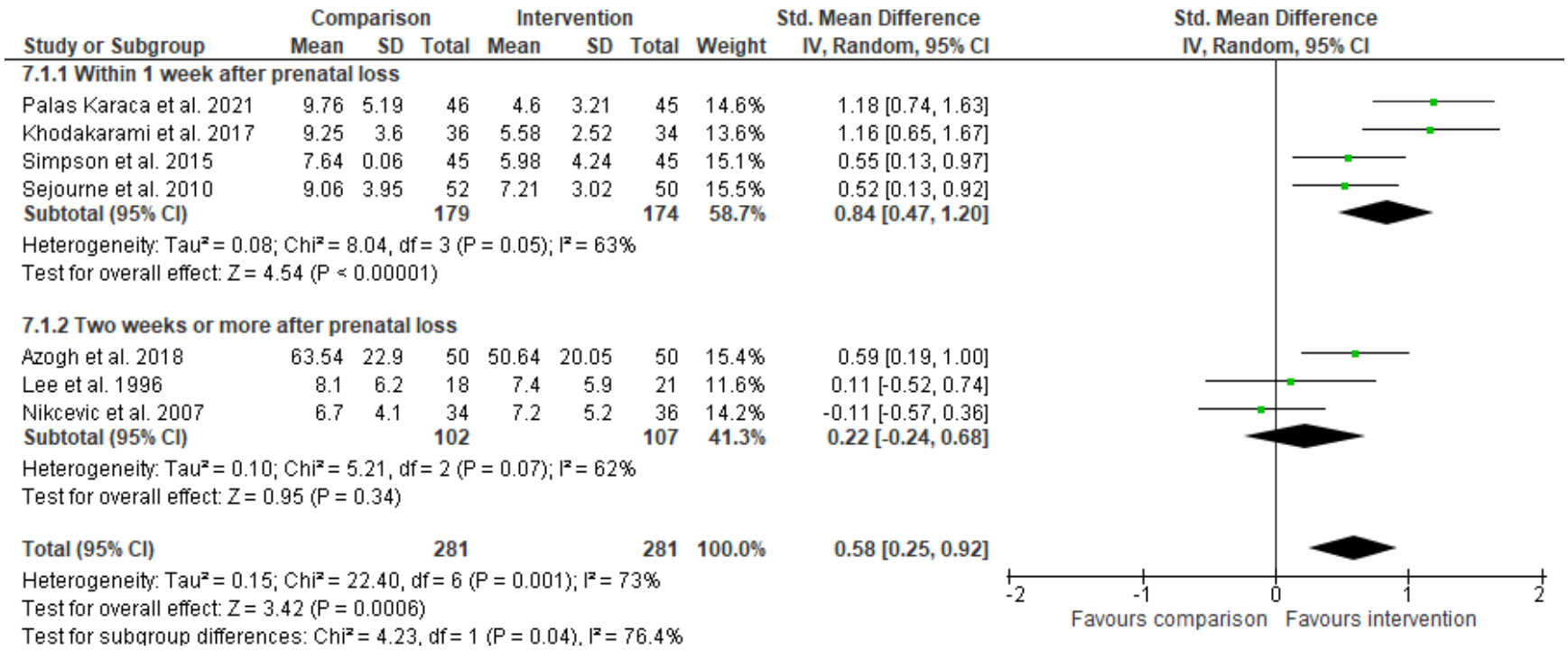


J1.d: PTS symptoms

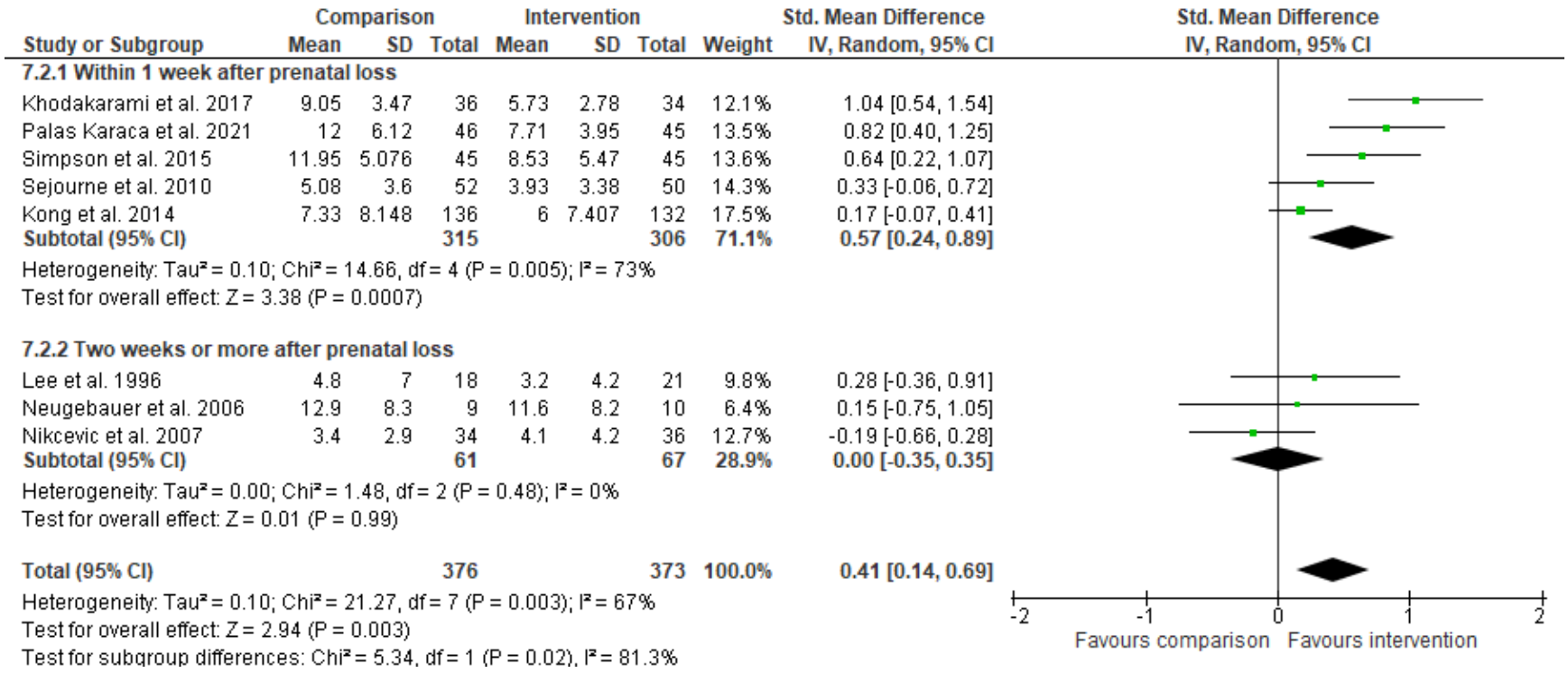


J2: Forest plots of effect on symptoms relative to the timing of intervention commencement (based on comparisons at the first evaluation timepoint).

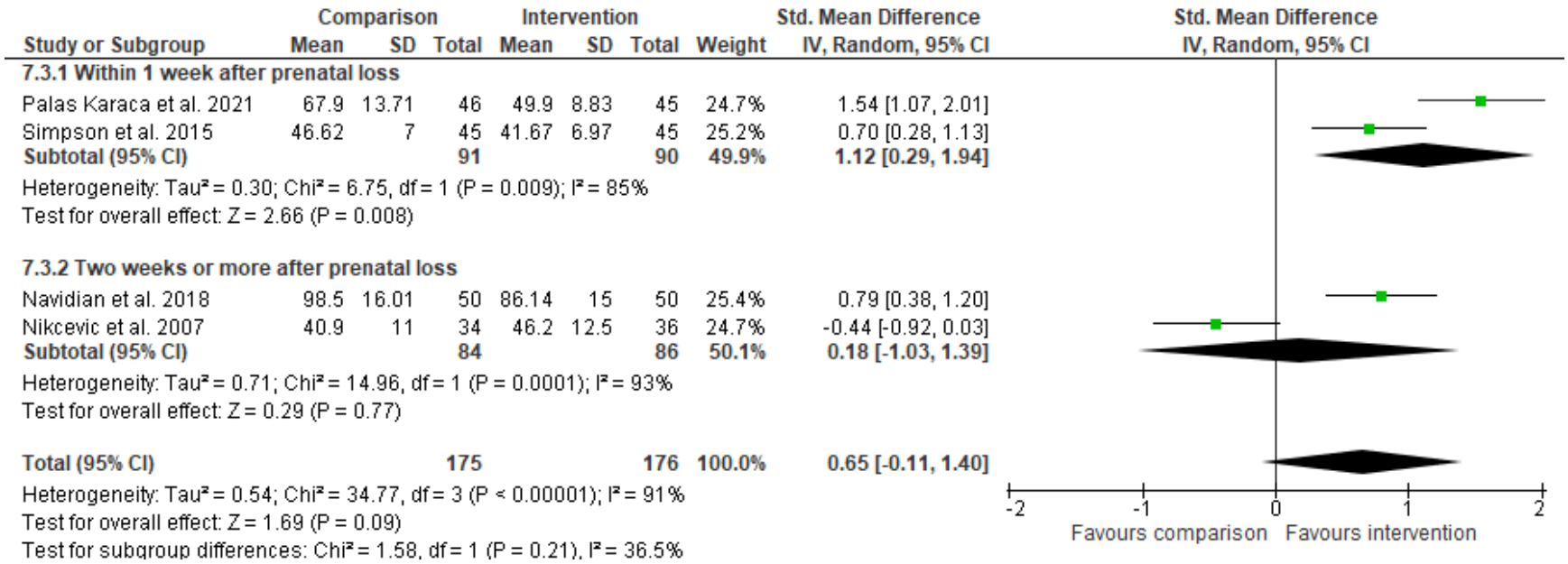
J2.a: Anxiety symptoms



J2.b: Depressive symptoms

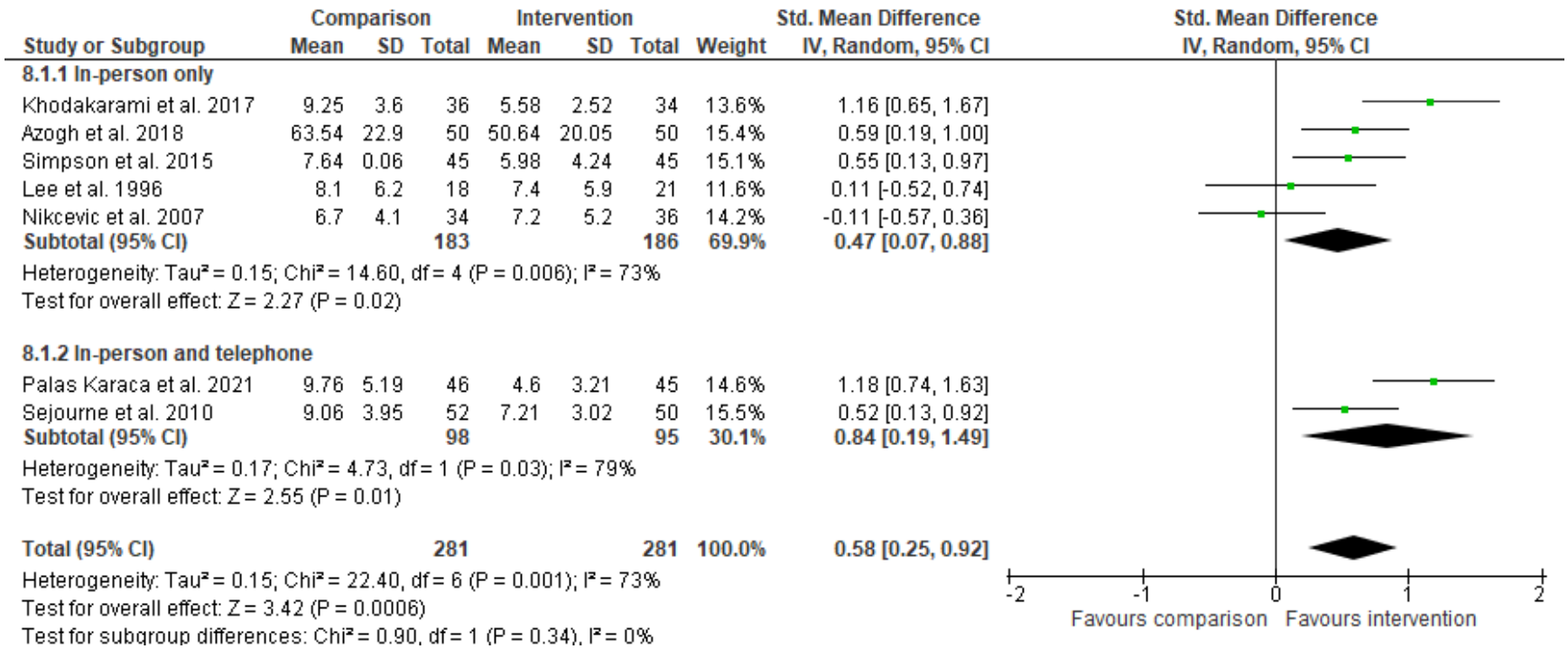


J2.c: Grief symptoms



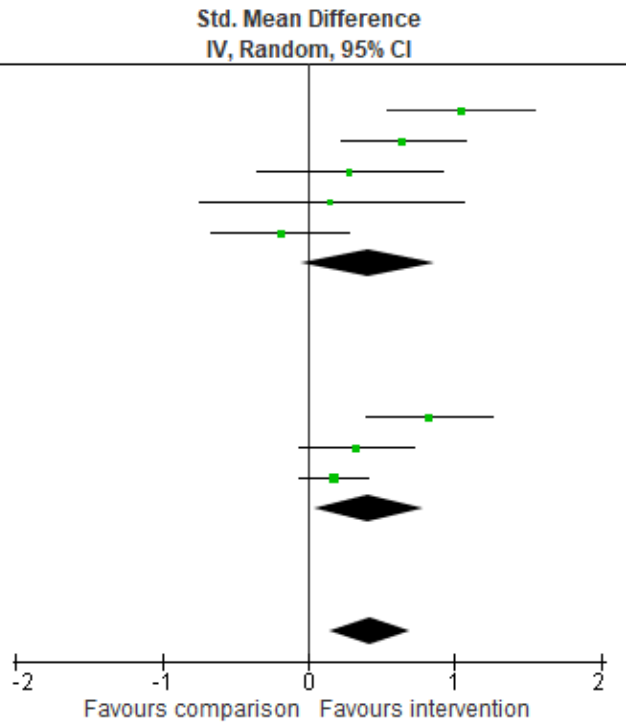
J3: Forest plots of effect on symptoms relative to mode of intervention implementation (based on comparisons at the first evaluation timepoint).

J3.a: Anxiety symptoms



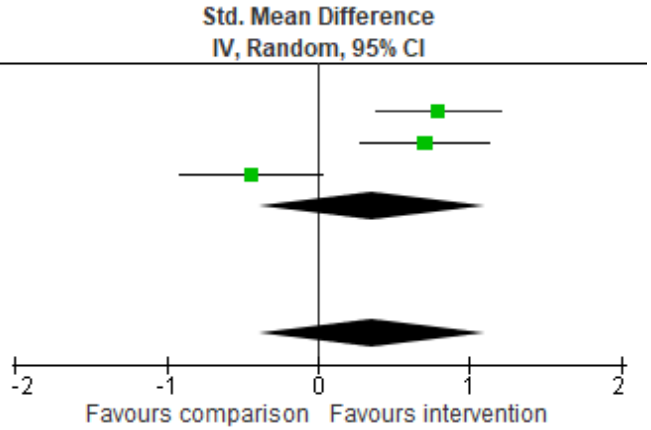
J3.b: Depressive symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
8.2.1 In-person only								
Khodakarami et al. 2017	9.05	3.47	36	5.73	2.78	34	12.1%	1.04 [0.54, 1.54]
Simpson et al. 2015	11.95	5.076	45	8.53	5.47	45	13.6%	0.64 [0.22, 1.07]
Lee et al. 1996	4.8	7	18	3.2	4.2	21	9.8%	0.28 [-0.36, 0.91]
Neugebauer et al. 2006	12.9	8.3	9	11.6	8.2	10	6.4%	0.15 [-0.75, 1.05]
Nikcevic et al. 2007	3.4	2.9	34	4.1	4.2	36	12.7%	-0.19 [-0.66, 0.28]
Subtotal (95% CI)			**142**			**146**	**54.6%**	**0.41 [-0.06, 0.87]**
Heterogeneity: Tau² = 0.19; Chi² = 13.97, df = 4 (P = 0.007); I² = 71%								
Test for overall effect: Z = 1.72 (P = 0.09)								
8.2.2 In-person and telephone								
Palas Karaca et al. 2021	12	6.12	46	7.71	3.95	45	13.5%	0.82 [0.40, 1.25]
Sejourne et al. 2010	5.08	3.6	52	3.93	3.38	50	14.3%	0.33 [-0.06, 0.72]
Kong et al. 2014	7.33	8.148	136	6	7.407	132	17.5%	0.17 [-0.07, 0.41]
Subtotal (95% CI)			**234**			**227**	**45.4%**	**0.41 [0.04, 0.78]**
Heterogeneity: Tau² = 0.08; Chi² = 6.80, df = 2 (P = 0.03); I² = 71%								
Test for overall effect: Z = 2.16 (P = 0.03)								
Total (95% CI)			**376**			**373**	**100.0%**	**0.41 [0.14, 0.69]**
Heterogeneity: Tau² = 0.10; Chi² = 21.27, df = 7 (P = 0.003); I² = 67%								
Test for overall effect: Z = 2.94 (P = 0.003)								
Test for subgroup differences: Chi² = 0.00, df = 1 (P = 0.99), I² = 0%								



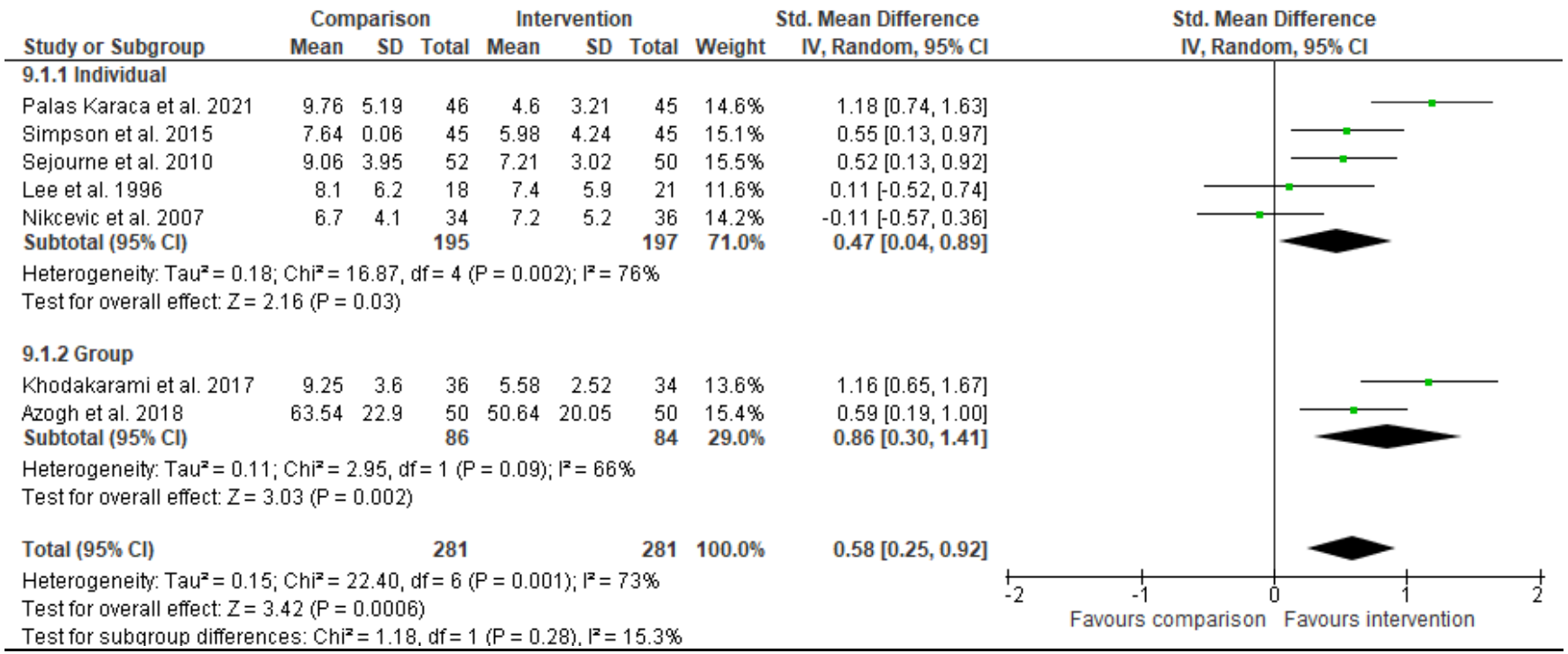
J3.c: Grief symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
8.3.1 In-person only								
Navidian et al. 2018	98.5	16.01	50	86.14	15	50	33.8%	0.79 [0.38, 1.20]
Simpson et al. 2015	46.62	7	45	41.67	6.97	45	33.5%	0.70 [0.28, 1.13]
Nikcevic et al. 2007	40.9	11	34	46.2	12.5	36	32.7%	-0.44 [-0.92, 0.03]
Subtotal (95% CI)			**129**			**131**	**100.0%**	**0.36 [-0.39, 1.10]**
Heterogeneity: Tau² = 0.38; Chi² = 17.59, df = 2 (P = 0.0002); I² = 89%								
Test for overall effect: Z = 0.94 (P = 0.35)								
Total (95% CI)			**129**			**131**	**100.0%**	**0.36 [-0.39, 1.10]**
Heterogeneity: Tau² = 0.38; Chi² = 17.59, df = 2 (P = 0.0002); I² = 89%								
Test for overall effect: Z = 0.94 (P = 0.35)								
Test for subgroup differences: Not applicable								



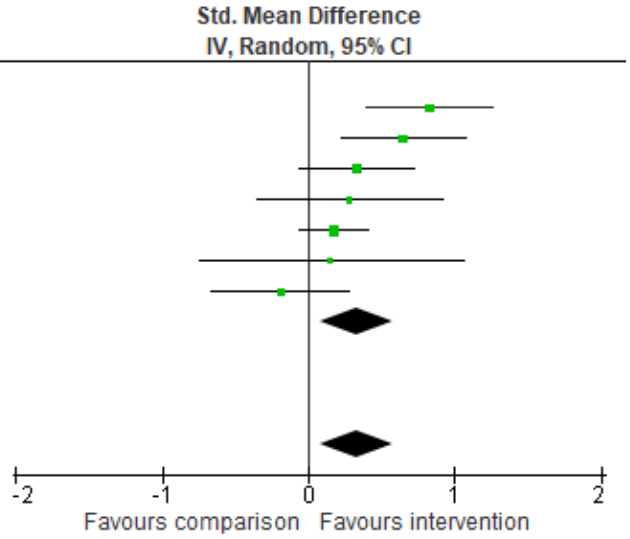
J4: Forest plots of effect on symptoms relative to format of intervention implementation (based on comparisons at the first evaluation timepoint).

J4.a: Anxiety symptoms



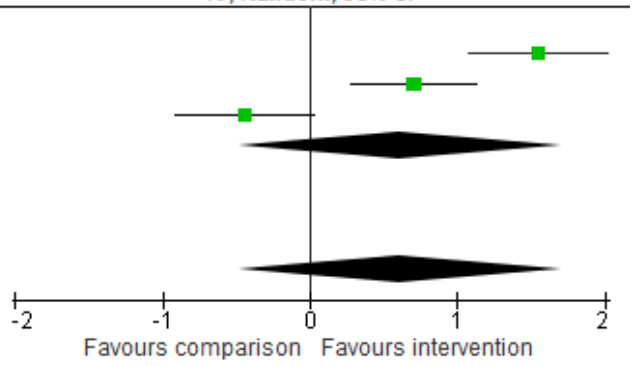
J4.b: Depressive symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
9.2.1 Individual								
Palas Karaca et al. 2021	12	6.12	46	7.71	3.95	45	15.4%	0.82 [0.40, 1.25]
Simpson et al. 2015	11.95	5.076	45	8.53	5.47	45	15.5%	0.64 [0.22, 1.07]
Sejourne et al. 2010	5.08	3.6	52	3.93	3.38	50	16.6%	0.33 [-0.06, 0.72]
Lee et al. 1996	4.8	7	18	3.2	4.2	21	10.1%	0.28 [-0.36, 0.91]
Kong et al. 2014	7.33	8.148	136	6	7.407	132	22.1%	0.17 [-0.07, 0.41]
Neugebauer et al. 2006	12.9	8.3	9	11.6	8.2	10	6.1%	0.15 [-0.75, 1.05]
Nikcevic et al. 2007	3.4	2.9	34	4.1	4.2	36	14.1%	-0.19 [-0.66, 0.28]
Subtotal (95% CI)			**340**			**339**	**100.0%**	**0.33 [0.08, 0.58]**
Heterogeneity: Tau² = 0.06; Chi² = 13.68, df = 6 (P = 0.03); I² = 56%								
Test for overall effect: Z = 2.55 (P = 0.01)								
Total (95% CI)			**340**			**339**	**100.0%**	**0.33 [0.08, 0.58]**
Heterogeneity: Tau² = 0.06; Chi² = 13.68, df = 6 (P = 0.03); I² = 56%								
Test for overall effect: Z = 2.55 (P = 0.01)								
Test for subgroup differences: Not applicable								



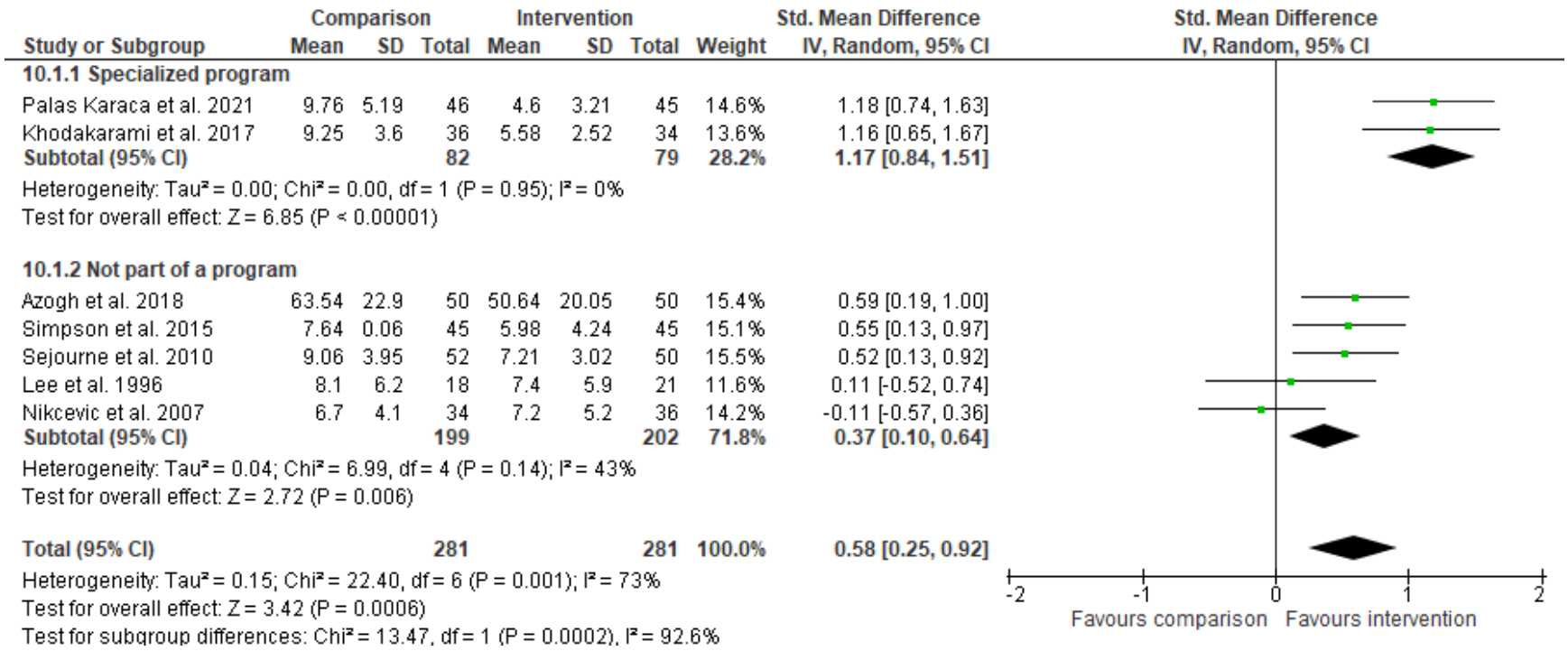
J4.c: Grief symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
9.3.1 Individual								
Palas Karaca et al. 2021	67.9	13.71	46	49.9	8.83	45	33.2%	1.54 [1.07, 2.01]
Simpson et al. 2015	46.62	7	45	41.67	6.97	45	33.6%	0.70 [0.28, 1.13]
Nikcevic et al. 2007	40.9	11	34	46.2	12.5	36	33.2%	-0.44 [-0.92, 0.03]
Subtotal (95% CI)			**125**			**126**	**100.0%**	**0.60 [-0.49, 1.69]**
Heterogeneity: Tau² = 0.88; Chi² = 34.26, df = 2 (P < 0.00001); I² = 94%								
Test for overall effect: Z = 1.08 (P = 0.28)								
Total (95% CI)			**125**			**126**	**100.0%**	**0.60 [-0.49, 1.69]**
Heterogeneity: Tau² = 0.88; Chi² = 34.26, df = 2 (P < 0.00001); I² = 94%								
Test for overall effect: Z = 1.08 (P = 0.28)								
Test for subgroup differences: Not applicable								

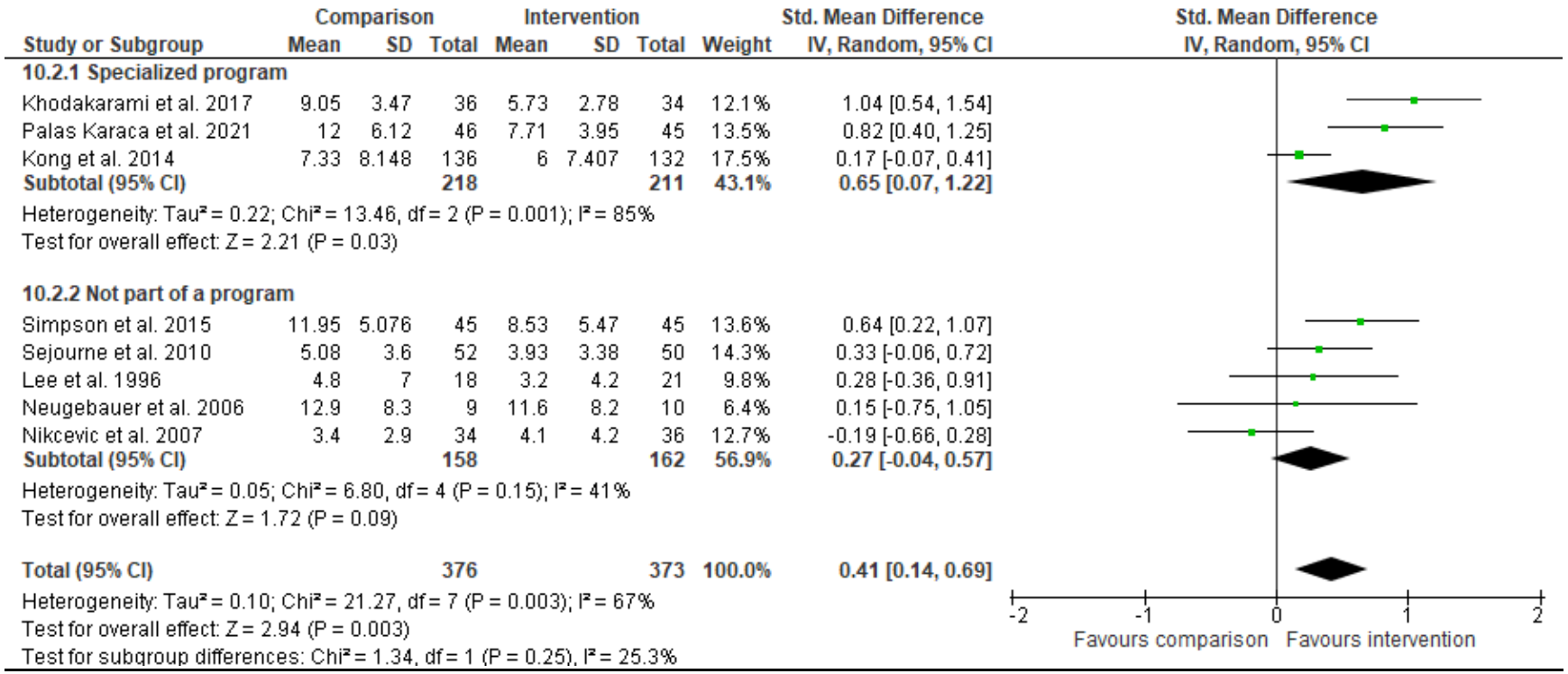


J5: Forest plots of effect on symptoms relative to method of intervention implementation (based on comparisons at the first evaluation timepoint).

J5.a: Anxiety symptoms

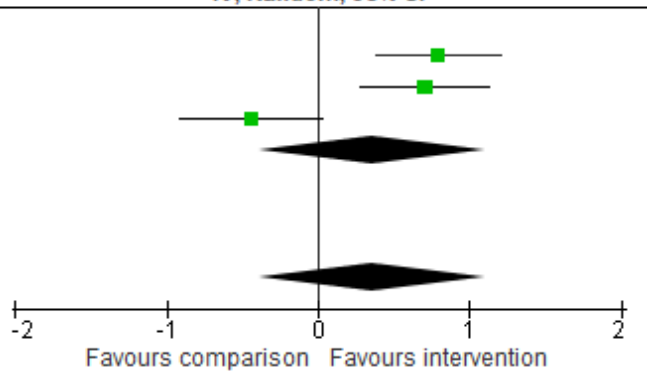


J5.b: Depressive symptoms



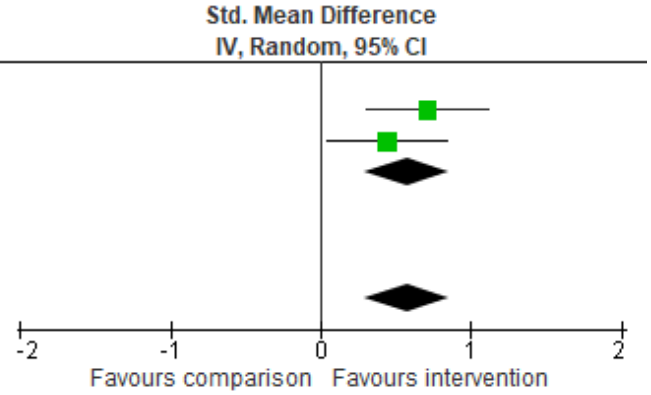
J5.c: Grief symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
10.3.1 Not part of a program								
Navidian et al. 2018	98.5	16.01	50	86.14	15	50	33.8%	0.79 [0.38, 1.20]
Simpson et al. 2015	46.62	7	45	41.67	6.97	45	33.5%	0.70 [0.28, 1.13]
Nikcevic et al. 2007	40.9	11	34	46.2	12.5	36	32.7%	-0.44 [-0.92, 0.03]
Subtotal (95% CI)			**129**			**131**	**100.0%**	**0.36 [-0.39, 1.10]**
Heterogeneity: Tau² = 0.38; Chi² = 17.59, df = 2 (P = 0.0002); I² = 89%								
Test for overall effect: Z = 0.94 (P = 0.35)								
Total (95% CI)			**129**			**131**	**100.0%**	**0.36 [-0.39, 1.10]**
Heterogeneity: Tau² = 0.38; Chi² = 17.59, df = 2 (P = 0.0002); I² = 89%								
Test for overall effect: Z = 0.94 (P = 0.35)								
Test for subgroup differences: Not applicable								



J5.d: PTS symptoms

Study or Subgroup	Comparison Mean	SD	Total	Intervention Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
10.4.1 Not part of a program								
Navidian et al. 2017	6.5	3.28	50	4.52	2.14	50	48.5%	0.71 [0.30, 1.11]
Sejourne et al. 2010	33.77	17.65	52	26.15	16.87	50	51.5%	0.44 [0.04, 0.83]
Subtotal (95% CI)			**102**			**100**	**100.0%**	**0.57 [0.29, 0.85]**
Heterogeneity: Tau² = 0.00; Chi² = 0.89, df = 1 (P = 0.35); I² = 0%								
Test for overall effect: Z = 3.96 (P < 0.0001)								
Total (95% CI)			**102**			**100**	**100.0%**	**0.57 [0.29, 0.85]**
Heterogeneity: Tau² = 0.00; Chi² = 0.89, df = 1 (P = 0.35); I² = 0%								
Test for overall effect: Z = 3.96 (P < 0.0001)								
Test for subgroup differences: Not applicable								



APPENDIX K: INTERVENTION THEMES

Overall, 3-8 sessions	Azogh et al., 2018	Khodakarami et al., 2017	Navidian et al., 2017, Navidian & Saravani, 2018	Palas Karaca & Oskay, 2021	Swanson et al., 2009	*Themes identified across studies (k=5)
Session 1	Introduction to unresolved sadness: a journey from the previous pregnancy and child to the present pregnancy and child *Acknowledge the loss. The effect of previous experience in the current pregnancy. *Explore the impact of the loss.	Giving medical information about the definition, prevalence, causes and ways of diagnosing and treating miscarriage, reducing the anxiety caused by lack of awareness. *Establish safety (normalize details surrounding the loss, emotional) Techniques to increase physical activity, techniques for enhancing creativity, being productive and preforming useful and meaningful works. *Becoming informed and effective coping strategies.	Mothers sharing their grief, loss experience, previous experiences. *Acknowledge the loss. Stages of grieving and grief cycle. *Establish safety (normalize the experience, emotional).	Routine care (counseling after miscarriage including family planning method, time of new pregnancy, signs of danger), hemorrhage control, pain relief. *Establish safety (physical, emotional. The women were asked about how they felt after the loss to give them opportunity to express their feelings. *Acknowledge the loss. *Process emotions surrounding loss.	Coming to know (balancing the mounting evidence of impending loss against hopes for a health pregnancy outcome). *Acknowledge the loss. Naming for oneself what was lost or gained or both through miscarriage. *Explore the impact of the loss. The growth realized through experiencing their inner strength or in discovering the capacity of their relationships to handle adversity. *Establish safety (inner and outer resources, environment).	Establish cognitive, emotional, physical, and environmental safety (basic health needs, normalizing, resources). Acknowledge the loss. Explore the impact of the loss. Becoming informed and effective coping strategies. Process emotions surrounding loss.
Session 2	Psychological dimensions of pregnancy subsequent to stillbirth: threats, vulnerabilities, emotional blockage, and shield.	Principles of hearty relationships. *Becoming informed and effective coping strategies. *Establish safety (environment, relational).	Exposure, identifying feelings and dysfunctional beliefs in mothers, reviewing negative thoughts, and challenging with them, events triggering	Express concerns and anger about miscarriage & acceptance. *Process emotions surrounding the loss. Encouraged to change	Explored women's experiences of sharing the loss. *Explore the impact of the loss. Identifying who was or was not available to acknowledge the loss, validate	Explore the impact of the loss. Process emotions surrounding loss. Establish safety.

	*Explore the impact of the loss. Expression of emotion. *Process emotions surrounding loss.		unpleasant emotions, emotional discharge. *Process emotions surrounding loss. Practicing writing methods for recovery. *Becoming informed and practicing effective coping strategies.	environment by engaging in activities. *Establish safety (environment).	responses, and offer support. *Establish safety (environmental relational). Going public - re-entering the childbearing/rearing world. Resuming life as a no longer expectant couple. *Integration of loss into life.	Becoming informed and effective coping strategies. Integration of loss into life.
Session 3	Normal physiology of pregnancy. *Establishing safety (normalizing details surrounding pregnancy, emotional) Expressing the memories of pregnancy. *Process emotions surrounding loss.	Principles of positive and optimistic thinking. *Becoming informed and effective coping strategies. *Establish safety (cognitive).	Cycle of thought-emotion: behavior, modifying cognitive errors, cognitive restructuring. *Establish safety (cognitive, emotional). Finding meaning in the loss. Post-traumatic growth using religious & spiritual teachings. *Becoming informed and effective coping strategies. *Integration of loss.	The women were asked how they had been feeling since the last interview to allow emotional expression about the miscarriage. *Process emotions surrounding loss.	Focus on getting through it. *Process emotions surrounding loss. Chronicling personal progress toward resolution. *Becoming informed and effective coping strategies. *Integration of loss. Facing the ongoing fears of future loss, planning for conception and pregnancy. *Integration of loss. *Planning for the future.	Establish safety. Process emotions surrounding loss. Becoming informed and effective coping strategies. Integration of loss. Planning for the future.
Session 4	Strategies to deal with pregnancy following stillbirth: stress management methods, problem	Technique of planning and better organization. *Becoming informed and effective coping strategies.	Practicing coping techniques (distraction, patience training, physical activity,	Women asked if they shared their feelings about miscarriage with their family or friends.		Establish safety. Becoming informed and effective coping strategies.

	solving models, and conclusion. *Becoming informed and effective coping strategies. *Integration of loss into life.		community involvement). *Becoming informed and effective coping strategies. Adapting to new life. *Integration of loss. Preparing for future pregnancy. *Planning for the future.	*Establish safety (relational). *Integrating the loss into life. Discussion about the positive and negative feelings experienced following loss. *Process emotions surrounding loss. Encouraged to maintain hope and belief, in the event there was a plan to become pregnant again. *Integration of loss into life. *Planning for the future.		Integration of loss into life. Process emotions surrounding loss. Planning for the future.
Session 5		Discussed expectations, healthy character, and being authentic. *Integration of loss into life. Techniques of lowering expectations. *Becoming informed and effective coping strategies		Facilitated maintaining belief, asked about well-being, questions answered. *Integration of loss into life.		Becoming informed and effective coping strategies. Integration of loss into life.
Session 6		Discussed living in the present. *Becoming informed and effective coping strategies.		Facilitated maintaining belief. Women interested in a subsequent pregnancy, or who wanted information on		Becoming informed and effective coping strategies. Integration of loss into life.

		*Integration of loss into life.		issues were supported. *Integration of loss into life. *Planning for the future.		Planning for the future.
Session 7		Techniques for discontinuing worries and expressing emotions. *Becoming informed and effective coping strategies.				Becoming informed and effective coping strategies.
Session 8		Techniques for giving value to happiness. *Becoming informed and effective coping strategies.				Becoming informed and effective coping strategies.

***Themes**

Establishing safety (cognitive, emotional, physical, environmental - basic needs, normalizing, resources), acknowledging the loss, exploring the impact of loss, processing emotions surrounding the loss, becoming informed and coping strategies, integrating loss into life, planning for the future.

APPENDIX L: ONLINE RECRUITMENT ADVERTISEMENTS

Advertisement 1

- We are inviting women, who have experienced a pregnancy loss within Canada in the past 2 years, to share their view in our survey study.
- We would like to know what influences women in discussing their emotional health after pregnancy loss, and their preferences in emotional care.
- If you wish to participate, please take our 10-minute survey.

This study has been approved by the University of Calgary Conjoint Health Research Ethics Board #REB19-1990.

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Survey on Pregnancy Loss

UNIVERSITY OF CALGARY

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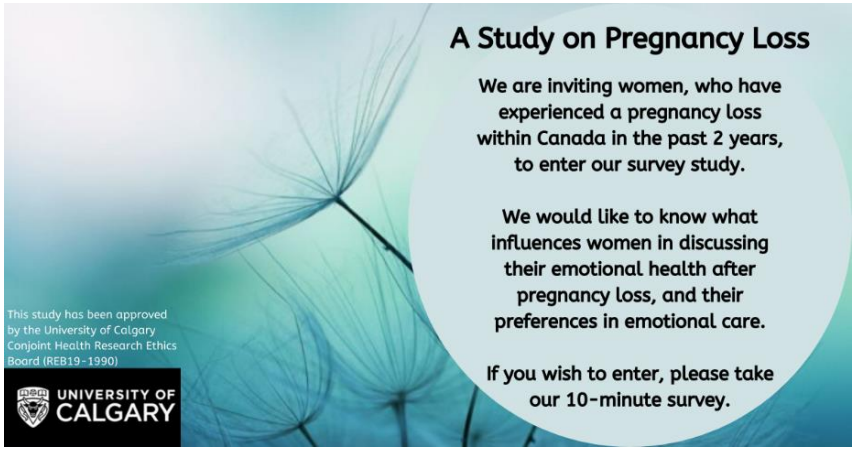

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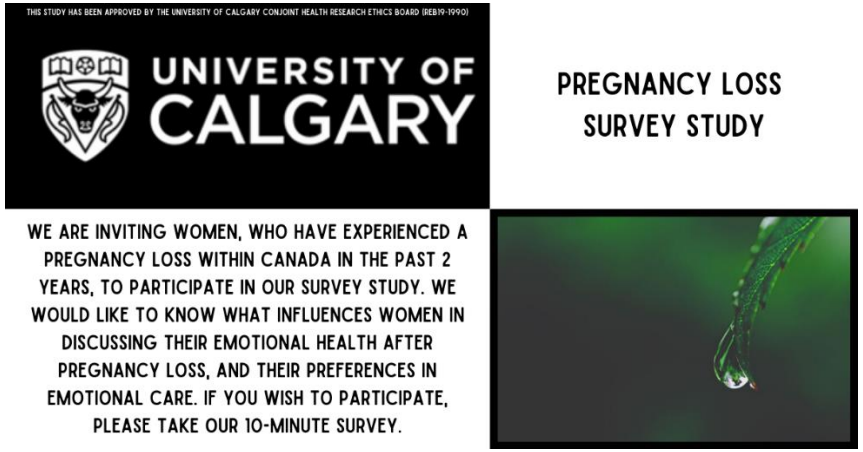
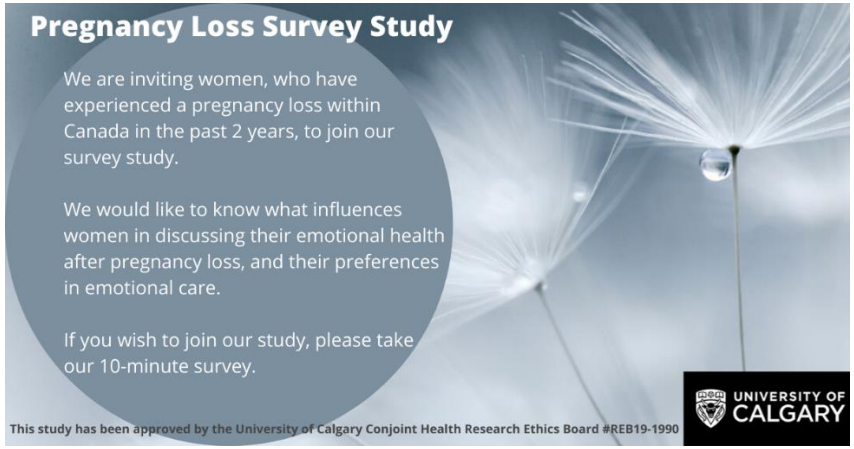


Advertisement 11



APPENDIX M: STUDY DETAILS

UNIVERSITY OF CALGARY

EMOTIONAL CARE FOR WOMEN AFTER PREGNANCY LOSS

A Research Study

BACKGROUND

Pregnancy loss has negative effects on women's emotional health. Grief, depression, anxiety and posttraumatic stress are common. As a result, it is especially important for women to take care of their emotional health during this time.

Our understanding of what influences women in discussing their emotional health after pregnancy loss and their preferences in emotional care, is lacking. This keeps us from developing improved emotional health care programs for women after pregnancy loss.

WHAT IS THE PURPOSE OF THE STUDY?

To help us understand what influences women in discussing their emotional health after pregnancy loss and their preferences with emotional care, we are looking for up to 350 women to complete an online survey. If you have experienced a pregnancy loss within Canada in the past two years, we invite you to share your point of view.

The information that you share will teach us how to best engage women affected by pregnancy loss in emotional health screening and monitoring and the type and delivery of emotional care that is preferred. The information you share will be used to develop and improve programs that support women's emotional health and coping after pregnancy loss.

WHAT WOULD I HAVE TO DO?

We will ask you to complete an online survey. There is only one survey that will take you 10 minutes to complete. You can access the survey by clicking the 'Start Survey' icon.

Thank you for helping us improve women's emotional health and their ability to cope after pregnancy loss.

Elyse Mireille Charrois
PhD Student Researcher

Dr. Dawn Kingston
Principle Investigator

The University of Calgary Conjoint Health Research Ethics Board has approved this study (REB19-1990).

APPENDIX N: IMPLIED CONSENT TO PARTICIPATE IN RESEARCH

TITLE: Women's perception of the barriers and facilitators related to discussing emotional health after pregnancy loss and their preferences in emotional care.

SPONSOR: University of Calgary

FUNDER: Not funded.

INVESTIGATORS: Dr. Dawn Kingston (Principle Investigator)
Contact: ----------

Elyse Mireille Charrois (PhD student researcher)
Contact: ----------

INTRODUCTION

Dr. Dawn Kingston, RN, PhD, and associates from the Faculty of Nursing at the University of Calgary are conducting a research study.

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research study is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information.

You are invited to be in this study if you have experienced a pregnancy loss within Canada in the last 2 years. Your participation in this study is voluntary.

WHY IS THIS STUDY BEING DONE?

This study is being done to improve health care that supports women's emotional health and coping after pregnancy loss.

The purpose of this research study is to help us understand what encourages and discourages women in discussing their emotional health after pregnancy loss and their preferences in emotional care.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

About 350 Canadian women will take part in this online survey study.

WHAT WILL HAPPEN IF I TAKE PART IN THIS RESEARCH STUDY?

If you participate in this study, you will be asked to do the following:

- Complete an online survey
  - Survey will be taken once only
  - Survey will be 99% multiple choice questions
  - Survey will take 10 minutes to complete

ARE THERE ANY POTENTIAL RISKS OR DISCOMFORTS THAT I CAN EXPECT FROM THIS STUDY?

There are no known risks associated with completing the online survey.

It is possible that you may feel emotions that are uncomfortable or upsetting while you are completing the survey. As such, you can exit the survey at any time, and do not have to provide a reason. If you feel you need additional care, please contact the support services available in your area.

HOW LONG WILL I BE IN THIS STUDY?

The survey is to be completed once only with no follow-up required. The survey will take 10 minutes to complete.

ARE THERE ANY POTENTIAL BENEFITS IF I PARTICIPATE?

There may or may not be a direct benefit to you.

The information that you share may benefit the practice of health care professionals supporting women after pregnancy loss and improve programs available to women after loss.

CAN I STOP BEING IN THE STUDY?

Your participation in this study is completely voluntary and you may withdraw from the study at any time for any reason.

If you have started the survey and do not want to finish, you can withdraw from the study by exiting the survey or closing the browser. There will be no consequences to you if you withdraw from this study.

Please note that because your responses are captured anonymously, you will not be able to withdraw your responses once you have finished the survey.

WILL INFORMATION ABOUT ME AND MY PARTICIPATION BE KEPT CONFIDENTIAL?

Any information that you provide is captured anonymously and kept confidential.

The survey in this study does not ask for direct personal identifiers or any information that may be used to directly identify you. However, you will be asked to share some demographic information (age, education, income). To ensure this information remains anonymous, your information will be grouped with other participants who have shared similar information.

The online survey tool called Qualtrics will be used in this study. Qualtrics is a survey platform with servers located in Toronto, Ontario, Canada. All data are encrypted and stored directly on its servers. Researcher access to the survey data is password protected and the transmission is encrypted. Survey responses cannot be linked to your computer, laptop, tablet or smart phone.

All research data and records that are downloaded from Qualtrics will be stored electronically in a password protected folder on a password protected computer. Only the PhD student researcher will have access to the data.

If the Primary Investigator wishes to have access to the raw data, it will be uploaded onto a password protected USB drive and transferred in person by the PhD student researcher in a locked metal container to the Primary Investigator.

HOW LONG WILL INFORMATION FROM THE STUDY BE KEPT?

Research data and records will be kept for approximately 5 years. All data will be stored in a de-identified state.

Data collected for this study may be shared with other researchers for future studies that are unknown at this time. Any data shared with other researchers, will not include your name or other personal identifying information. Any future use of this research data is required to undergo review by a Research Ethics Board.

WHOM MAY I CONTACT IF I HAVE QUESTIONS ABOUT THIS STUDY?

The Research Team:
You may contact Dr. Dawn Kingston at (---) ---.---- or Elyse Mireille Charrois at (---) ---.---- with any questions or concerns about the research or your participation in this study.

Conjoint Health Research Ethics Board (CHREB):

If you have any questions concerning your rights as a possible participant in this research, please contact the Chair, Conjoint Health Research Ethics Board, University of Calgary at (---) ---.----.

AGREEMENT TO PARTICIPATE

Your decision to proceed with the survey will be interpreted as an indication of your agreement to participate. In no way does this waive your legal rights nor release the investigators or involved institutions from their legal and professional responsibilities.

You are free to withdraw from the study at any time.

APPENDIX O: DESCRIPTIVE SURVEY

Start of Block: Introduction

Consent: Welcome to the survey! Please read our Study Details and Consent before proceeding.

Crisis Contact: If at any time during this survey you feel that you are experiencing an immediate crisis, please exit the survey and call the 24-hour Crisis Line available in your area. If at any time during this survey you experience emotional distress and require further care, please contact the support services available in your area.

End of Block: Introduction

Start of Block: About you and your prenatal loss

PL 2Y: Did you experience a prenatal loss (miscarriage or stillbirth) within the past 2 years?

- No
- Yes

Skip To: TY No PL 2Y If: Did you experience a prenatal loss (miscarriage or stillbirth) within the past 2 years? = No
Skip To: PL Canada If: Did you experience a prenatal loss (miscarriage or stillbirth) within the past 2 years? = Yes

TY No PL 2Y: Since you selected 'No' to the previous question, this survey will not be relevant to you. We wish to learn more about the view of women who have experienced a prenatal loss in the last 2 years. You are invited to participate in future research that may be relevant to you in some way. Thank you for your interest in this study.

Skip to: End of Survey If: Since you selected 'No' to the previous question, this survey will not be relevant to you. We wish…..Is Displayed

PL Canada: Did you experience your prenatal loss in Canada?

- No
- Yes

Skip To: TY PL No Canada If: Did you experience your prenatal loss in Canada? = No
Skip To: Province If: Did you experience your prenatal loss in Canada? = Yes

TY PL No Canada: Since you selected 'No' to the previous question, this survey will not be relevant to you. We wish to learn more about the view of women who have experienced their prenatal loss in

Canada. You are invited to participate in future research that may be relevant to you in some way. Thank you for your interest in this study.

Skip To: End of Survey If: Since you selected 'No' to the previous question, this survey will not be relevant to you. We wish….Is Displayed

Province: In what province did you reside when you experienced your most recent prenatal loss?

_____

PL gestation: What gestation period did you experience your prenatal loss?

- Before 20 weeks
- At 20 weeks or later

Time since PL: How long ago did you experience your prenatal loss?

- Less than one year ago
- Between one and two years ago

First PL: Was this your first prenatal loss?

- No
- Yes

Children: Do you have one or more children?

- No
- Yes

Age: What is your current age? (Please use numbers only)_____

Education: What is your highest level of education?

- Some elementary or high school
- Completed high school
- College, trade, or technical studies
- Undergraduate studies (Bachelor's degree)
- Graduate studies (Masters, PhD)
- Post-doctoral studies

Income: What is the best estimate of your total household income in the past 12 months, before taxes and deductions?

- Under $25,000
- $ 25,000 - 49,999
- $ 50,000 - 74,999
- $ 75,000 - 99,999
- Over $ 100,000

Marital Status: How would you describe your marital status?

- Married
- Common-law
- Single (never married)
- Separated
- Widowed
- Divorced

Ethnicity: How would you describe your ethnic/cultural background?

- Aboriginal (eg. Inuit, Metis, First Nations)
- Arab/West Asian (eg. Lebanon, Syria, Turkey, Saudi Arabia)
- African (eg. Ghana, Kenya, Uganda)
- Caribbean (eg. Bahamas, Haiti, Jamaica)
- Southeast Asian (eg. Cambodia, Indonesia, Philippines, Thailand)
- South Asian (eg. Afghanistan, India, Pakistan)
- East Asian (eg. China, Mongolia, Korea, Japan, Taiwan)
- Central Asian (eg. Tajikistan, Uzbekistan, Kazakstan)
- Latin American (eg. Brazil, Guatemala, Mexico, Venezuela)
- European (Caucasian)
- Other

End of Block: About you and your prenatal loss

Start of Block: Your emotional health experience and prenatal loss

HP Ask: Did a healthcare provider ask you about your emotional health at any time around your prenatal loss? Emotional health refers to your emotions, feelings, or mood and/or how you are coping emotionally. (This includes any time you talked with a healthcare provider and/or completed a questionnaire)

- No
- Yes

Skip To: Own Ask If: Did a healthcare provider ask you about your emotional health at any time around your prenatal loss? … = No
Skip To: Who Asked If: Did a healthcare provider ask you about your emotional health at any time around your prenatal loss? .... = Yes

Own Ask: Since a healthcare provider did not ask you about your emotional health at any time around your prenatal loss, did you bring up the topic on your own?

- No
- Yes

Skip To: End of Block If: Since a healthcare provider did not ask you about your emotional health at any time around your prenatal ….. = No
Skip To: Own Who If: Since a healthcare provider did not ask you about your emotional health at any time around your prenatal …. = Yes

Own Who: With whom did you bring up the topic of your own emotional health? (Select all that apply)

- My midwife
- My obstetrician
- A nurse or nurse practitioner
- My family physician
- Social Worker
- Another healthcare provider (Please briefly explain)_____

Own Comfort: How comfortable were you when you brought up your own emotional health?

- Very comfortable
- Somewhat comfortable
- Somewhat uncomfortable
- Very uncomfortable

Own Honest: How honest did you feel you could be when you brought up your own emotional health?

- I could be completely honest
- I could be somewhat honest
- I could not be honest at all

Own Experience: Overall, how would you describe the experience of bringing up your own emotional health?

- It was a positive experience
- It was a negative experience

Skip To: End of Block If: Overall, how would you describe the experience of bringing up your own emotional health? = It was a positive experience

Skip To: End of Block If: Overall, how would you describe the experience of bringing up your own emotional health? = It was a negative experience

Who Asked: Who asked you about your emotional health? (Please select all that apply)

- My midwife
- My obstetrician
- A nurse or nurse practitioner
- My family physician
- Social Worker
- Another healthcare provider (Please briefly explain)_____

Asked Comfort: How comfortable were you with the way you were asked about your emotional health?

- Very comfortable
- Somewhat comfortable
- Somewhat uncomfortable
- Very uncomfortable

Asked Honest: How honest did you feel you could be when you were asked about your emotional health?

- I could be completely honest
- I could be somewhat honest
- I could not be honest at all

Asked Experience: Overall, how would you describe the experience of being asked about your emotional health?

- It was a positive experience
- It was a negative experience

End of Block: Your emotional health experience and prenatal loss

Start of Block: Barriers related to discussing emotional health

Barriers: Did any of the following discourage you from discussing your emotional health related to your prenatal loss with a healthcare provider? (Choose whether you strongly agree, agree, disagree, or strongly disagree with how pertinent each point was for you)

	Strongly agree	Agree	Disagree	Strongly disagree
Too busy	•	•	•	•
Too embarrassed	•	•	•	•
Not feeling physically well enough	•	•	•	•
Not feeling emotionally well enough	•	•	•	•
Not enough privacy to talk about my emotional health	•	•	•	•
Unsure of who to talk to or where to go	•	•	•	•
Unsure what emotions are not normal after a prenatal loss	•	•	•	•
Worried about being placed on a long waiting list	•	•	•	•
Worried that my children would be taken away from me	•	•	•	•
Worried of being viewed negatively or treated poorly	•	•	•	•
Worried that healthcare providers do not have the time or interest	•	•	•	•
Worried that the information I shared would not be kept confidential	•	•	•	•
Would rather discuss my feelings with my partner, friends or family	•	•	•	•
My partner, friends or family told me that my emotions are normal and not to worry	•	•	•	•
My family doctor did not say I need to talk to a healthcare provider about my emotional health	•	•	•	•

COVID19: Affected by Has anything related to COVID-19 affected your desire/ability to discuss your emotional health with a healthcare provider?

- No
- Yes
- Not applicable

Skip To: End of Block If: Has anything related to COVID-19 affected your desire/ability to discuss your emotional health with … = No

Skip To: COVID19 How If: Has anything related to COVID-19 affected your desire/ability to discuss your emotional health with … = Yes

Skip To: End of Block If: Has anything related to COVID-19 affected your desire/ability to discuss your emotional health with …= Not applicable

COVID19 How: How has COVID-19 affected your desire/ability to discuss your emotional health with a healthcare provider? (Please briefly explain)_____

End of Block: Barriers related to discussing emotional health

Start of Block: Facilitators related to discussing emotional health

Facilitators: Do any of the following encourage you to discuss your emotional health related to your prenatal loss with a healthcare provider? (Choose whether you strongly agree, agree, disagree, or strongly disagree with how pertinent each point is for you)

	Strongly agree	Agree	Disagree	Strongly disagree
Knowing that I am not alone if I am struggling emotionally	•	•	•	•
Knowing that talking about my emotional health is a normal part of care	•	•	•	•
Knowing that I would not be referred to as mentally ill by the healthcare provider	•	•	•	•
Knowing ahead of time that I am going to be asked about my emotional health	•	•	•	•
Knowing what to expect if I tell a healthcare provider that I am not coping emotionally	•	•	•	•
Having a healthcare provider who is sensitive and caring	•	•	•	•
Having a reason of why my prenatal loss might have occurred	•	•	•	•
Having a healthcare provider who includes my partner in emotional care	•	•	•	•
Having a healthcare provider who I trust and can be open and honest with	•	•	•	•
Having a healthcare provider ask me about my emotional health at my first prenatal visit	•	•	•	•
Having a healthcare provider who is aware of all options, besides psychiatric medication, that could help me	•	•	•	•
Having a healthcare provider who understands how my culture views emotions and prenatal loss	•	•	•	•
Having access to a convenient and flexible way of monitoring my own emotional health	•	•	•	•
Having the same healthcare provider with whom I can discuss my emotional health over time	•	•	•	•
Having access to a healthcare provider who specializes in the emotional health of women after prenatal loss	•	•	•	•

Approach Effect: Some women decide not to get help with emotional problems even though it might help them. Imagine that a woman is struggling with grief, anxiety, depression, or stress during or after a prenatal loss. How much of an effect do you think a healthcare provider's approach to discussing her emotional health has on whether she decides to get help?

- It would have a major effect
- It would have a minor effect
- It wouldn't have any effect - women would find the help they need anyway

End of Block: Facilitators related to discussing emotional health

Start of Block: Your preferences in emotional care

When share: When do you think that information about your emotional health should be shared with a healthcare provider?

- Before my prenatal loss
- During my prenatal loss
- After my prenatal loss
- Before, during and after my prenatal loss
- Only when I decide to bring it up on my own

Skip To: End of Block If: When do you think that information about your emotional health should be shared with a healthcare pro ... = Only when I decide to bring it up on my own

Self/Non-Self Monitor: How would you prefer that your emotional health is monitored?

- I would prefer to monitor my own emotional health with access to a healthcare provider
- I would prefer having a healthcare provider monitor my emotional health for me

Skip To: How Own Monitor If: How would you prefer that your emotional health is monitored? = I would prefer to monitor my own emotional health with access to a healthcare provider

Skip To: How HP Monitor If: How would you prefer that your emotional health is monitored? = I would prefer having a healthcare provider monitor my emotional health for me

How HP Monitor: How would you prefer that the healthcare provider monitor your emotional health?

- In-person
- Telephone communication
- Video communication (eg. facetime)
- Text communication (eg. chat session)
- Asynchronous communication (eg. email)

Skip To: Which HP If: How would you prefer that the healthcare provider monitor your emotional health? = In-person

Skip To: Which HP If: How would you prefer that the healthcare provider monitor your emotional health? = Telephone communication

Skip To: Which HP If: How would you prefer that the healthcare provider monitor your emotional health? = Video communication (eg. facetime)

Skip To: Which HP If: How would you prefer that the healthcare provider monitor your emotional health? = Text communication (eg. chat session)

Skip To: Which HP If: How would you prefer that the healthcare provider monitor your emotional health? = Asynchronous communication (eg. email)

How Own Monitor: How would you prefer to monitor your own emotional health?

- Using a self-screening tool via phone app
- Using a self-screening tool via webpage
- Using a self-screening tool on paper

Skip To: Own Paper HP Access If: How would you prefer to monitor your own emotional health? = Using a self-screening tool on paper

Skip To: Own Electr HP Access If: How would you prefer to monitor your own emotional health? = Using a self-screening tool via phone app

Skip To: Own Electr HP Access If: How would you prefer to monitor your own emotional health? = Using a self-screening tool via webpage

Own Electr HP Access: What kind of access with the healthcare provider would you prefer, while electronically monitoring your own emotional health?

- Having the self-screening tool send notifications to the healthcare provider who will contact me ONLY IF my emotional health ratings are getting worse
- Having the healthcare provider contact me regularly to discuss my emotional health
- Having flexible access to the healthcare provider whom I can contact when I choose

Skip To: Which HP If: What kind of access with the healthcare provider would you prefer, while electronically monitoring you…. = Having the self-screening tool send notifications to the healthcare provider who will contact me ONLY IF my emotional health ratings are getting worse

Skip To: Which HP If: What kind of access with the healthcare provider would you prefer, while electronically monitoring you…. = Having the healthcare provider contact me regularly to discuss my emotional health

Skip To: Which HP If: What kind of access with the healthcare provider would you prefer, while electronically monitoring you…. = Having flexible access to the healthcare provider whom I can contact when I choose

Own Paper HP Access: What kind of access with the healthcare provider would you prefer, while monitoring your own emotional health on paper?

- Regularly sending completed self-screens to a healthcare provider who will contact me ONLY IF my emotional health ratings are getting worse
- Having the healthcare provider contact me regularly to discuss my emotional health
- Having flexible access to the healthcare provider whom I can contact when I choose

Skip To: Which HP If: What kind of access with the healthcare provider would you prefer, while monitoring your own emotional ..... = Regularly sending completed self-screens to a healthcare provider who will contact me ONLY IF my emotional health ratings are getting worse

Skip To: Which HP If: What kind of access with the healthcare provider would you prefer, while monitoring your own emotional ..... = Having the healthcare provider contact me regularly to discuss my emotional health

Skip To: Which HP If: What kind of access with the healthcare provider would you prefer, while monitoring your own emotional ..... = Having flexible access to the healthcare provider whom I can contact when I choose

Which HP: With which healthcare provider would you prefer sharing your emotional health? (Choose one only)

- My midwife
- A social worker
- My family physician
- A nurse or nurse practitioner
- An emotional care professional/coach
- Another healthcare provider (Please briefly explain) _____

End of Block: Your preferences in emotional care

Start of Block: Your emotional health history

Dx? Have you ever been diagnosed with depression, anxiety, stress or any other kind of emotional concern by a healthcare professional?

- No
- Yes

Skip To: End of Block If: Have you ever been diagnosed with depression, anxiety, stress, or any other kind of emotional conc … = No

When Dx: When were you diagnosed?

- Before my prenatal loss
- After my prenatal loss

Txt? Were you treated for depression, anxiety, stress, or any other kind of emotional concern by a healthcare professional (eg., medication, counselling, other)?

- No
- Yes

Skip To: End of Block If: Were you treated for depression, anxiety, stress, or any other kind of emotional concern by a health …. = No

When Txt: When were you treated?

- Before I became pregnant
- After my prenatal loss
- Before and after my prenatal loss

End of Block: Your emotional health history

Start of Block: Conclusion

Conclude: Congratulations you have successfully completed the survey! Thank you for sharing your view of what influences you in discussing your emotional health with a healthcare provider, and your preferences in emotional care. The information you provided may be used to improve health care that supports women's emotional health and coping after prenatal loss.

End of Block: Conclusion