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Article

Death obsession's potential mediational role in the relation between pregnancy-related anxiety and prenatal obsessive-compulsive disorder

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Abstract

The study investigated the mediator role of death obsession in the relationship between pregnancy-related anxiety and prenatal obsessive-compulsive disorder among pregnant women in the Capricorn district, South Africa. Two hundred and six conveniently selected respondents completed questionnaires individually. Statistically significant associations were found between pregnancy-related anxiety and death obsession, death obsession and prenatal obsessive-compulsive disorder, and pregnancy-related anxiety and prenatal obsessive-compulsive disorder ($ps \leqslant .05$). Analysis further showed that death obsession mediates the relationship between pregnancy-related anxiety and both composite scores of a prenatal obsessive-compulsive disorder measure (Obsessive-Compulsive Inventory–Revised) and most of its components. The findings suggest that death obsession is a likely mediator that has to be studied further.

Keywords

Death obsession, obsessive-compulsive disorder, pregnancy-related anxiety, pregnant women, prenatal

Historically, pregnancy was generally thought to be a time of happiness and emotional well-being for a woman (Carter, 2005). Nonetheless, it has been established over time that the perinatal period can be a time of increased vulnerability for the onset of mental disorders (Vousoura, 2010). There is a growing recognition that some women suffer from either new onset or

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worsening of existing anxiety disorders during pregnancy and the postnatal period (Ross & McLean, 2006). Pregnancy-related anxiety and prenatal obsessive-compulsive disorder (OCD) are very common mental disorders during pregnancy and they adversely affect the quality of life of the sufferers (Huppert et al., 2009). Likewise, adverse effects on children have also been reported (Guardino & Dunkel Schetter, 2014).

It is prudent to investigate factors associated with pregnancy-related mental disorders, particularly the anxiety-based types, since this may help in the design of appropriate and effective interventions. Death obsession is one such pregnancy-related mental health concern. The term death obsession was coined by Abdel-Khalek (1998) to express the fear and preoccupation people hold over their own death or that of their loved ones. This study explores whether death obsession can be applied in relation to pregnant women. In particular, the nature of the association of death obsession with pregnancy-related anxiety and prenatal OCD is explored.

Conceptual relationship between pregnancy-related anxiety, prenatal OCD, and death obsession

There is a dearth of literature to demonstrate the relationship between death obsession and both pregnancy-related anxiety and prenatal OCD. Nonetheless, a conceptual relationship exists between the three constructs. First, all three have the common factor of being anxiety induced. For instance, pregnancy-related anxiety, variably called pregnancy-specific or prenatal anxiety, is prompted by excessive general anxiety, anxiety over childbirth, fear of bearing a child with a disability, losing the baby through miscarriage or stillbirth, fears about foetal health and well-being, fear over one's own injury, pain, or death during delivery, anxiety about anticipated care for the child, anxiety about insufficient social or familial support, and concerns about changes in appearance during and after childbirth (Bayrampour et al., 2016; Blackmore et al., 2006).

With regard to prenatal OCD, the obsessions are anxiety driven, and the compulsions are carried out to protect the baby, ward off the anxiety, as well as neutralise or suppress the obsession (McDonald, 2013). Rook (2015) states that feelings of anxiety as well as guilt and distress are often induced by the obsessions which precipitate the onset of compulsions which are employed to momentarily alleviate the distress. Finally, death obsession is also anxiety induced. The mere thought of death aggravates anxiety, be it thoughts of death of the self or a significant other. Abdel-Khalek and Maltby (2008) found that death obsession is positively related to anxiety, and anxiety was in turn a good predictor of death obsession.

In this study, death obsession describes anxiety over foetal death. On another level, there is a conceptual relationship between death obsession and prenatal OCD. This is because death obsession is also a form of an obsession. Abdel-Khalek (1998) states that there is a mutual relationship as well as an overlap between death and obsession; furthermore, the presence of an element of obsession in death was emphasised.

Association between pregnancy-related anxiety and death obsession

The fear of foetal death, miscarriage, stillbirth, or neonatal death in pregnant women is one area that has received almost no attention in pregnancy-related anxiety research. This is rather peculiar, because a number of scales that measure pregnancy-related anxiety make reference to the fear of losing one's baby during pregnancy. For instance, item 7 of the Pregnancy-Related Anxiety Scale (PRAS) reads: 'I am concerned or worried about losing the baby' (Rini et al., 1999). Similarly,

Blackmore et al.'s (2016) PRAS has an item that reads: 'I am afraid that my baby will be stillborn'. Item 9 of the same scale covers worries related to possible foetal death, disease, and anomaly, and item 16 of the Farsi Cambridge Worry Scale covers worries related to possible miscarriage (Mortazavi & Akaberi, 2016). Bayrampour et al. (2016) reported that most of the scales they reviewed in their study covered the dimension of fear of foetal loss.

Other studies allude to the anxiety pregnant women have over losing their unborn babies. As early as 1956, Pleshette and colleagues found that 50% of participants in their study reported being continually concerned about the baby dying in utero, while an additional 12% indicated intermittent concern. Available data show that the common themes of severe anxiety during pregnancy include, among others, the possibility of foetal death (Bayrampour et al., 2016; Mortazavi & Akaberi, 2016) and the probability of miscarriage (Mortazavi & Akaberi, 2016).

Numerous researchers reported that women with existing or previous pregnancy or past delivery complications, a history of pregnancy loss, pregnancy termination, or stillbirth have been found to be more likely to experience pregnancy-related anxiety (Silva et al., 2017; Van Heyningen et al., 2017). One of the profound concerns of such women is losing another baby (Côté-Arsenault et al., 2001). The anxiety of another foetal loss may perhaps be so extreme that the pregnant women become sceptic and no longer trust that their current pregnancies may yield a positive outcome, or more precisely, a live baby (Côté-Arsenault & Morrison-Beedy, 2001).

Association between prenatal OCD and death obsession

Studies report that OCD is a common psychiatric disorder in the perinatal period, and pregnancy is a well-recognised risk factor in precipitating it. The perinatal period is a time of high risk for OCD. This is consistent with the mean age of OCD onset and in some cases exacerbation, which includes the childbearing years in women, inferring that reproductive events such as pregnancy and childbirth may be linked to OCD in females (Forray et al., 2010; Uguz & Ayhan, 2011).

On the contrary, previous miscarriages, the number of live births, as well as complications in pregnancy, among others, are major risk factors for prenatal OCD (Forray et al., 2010). Given the above reported findings in research, it can be argued that pregnant women, in some cases, those who have experienced complications with previous pregnancies (miscarriages or stillbirths) have anxiety or an extreme fear of their unborn babies being harmed in some way and quite possibly the fear of foetal death. This can be substantiated by the common obsession of fear of contaminating the foetus with toxic substances or micro-organisms and as well the compulsions of washing and cleaning (Uguz et al., 2007). More specifically, McDonald (2013) reported that unwanted and intrusive thoughts in perinatal OCD are about harm coming to the baby, miscarriage, or even the mother intentionally causing harm to the baby herself.

The compulsions, repetitive or ritualistic behaviours involved in perinatal OCD sufferers are carried out in the hopes of protecting the baby or to suppress and inhibit the anxiety brought about by the obsessions (McDonald, 2013). For the reasons stated above, it is possible that the anxiety of foetal death may be one of the drivers of pregnancy-related OCD's obsessions and the associated compulsions. By extension, it can be argued that death obsession and prenatal OCD may be related in some way. This is because literature found that pregnancy is a well-known precipitant of OCD (Karla et al., 2005). Second, it has been stated that maternal obsessions are fixated on the well-being of the child and that the obsessions as well as compulsions are directly related to the baby (Karla et al., 2005).

According to psychoanalytic theory, death anxiety is primitive (fundamental to development), and for that reason, it is likely to act as a mediator (Blass, 2014). Freud (1915/1985) asserted that

humans have no capacity to experience their own deaths, since they can only observe their own demise as spectators, with the full knowledge that they are very much alive. Thus, death fear is a concealment of an underlying anxiety emanating from childhood experiences, triggered by current life events. Although Freud never placed death anxiety at the source of psychopathology, rather considering it as the sequel to it, later psychodynamic and death anxiety theorists such as Bowlby (1988) and Becker (1973) espoused an almost opposite view (Hoelterhoff, 2015). Klein went so far as to suggest that it is possible to experience one's own death and that the fear of death is at the base of primary anxiety (Blass, 2014). Arguing from different vantage points, successive empirical studies have in fact situated death anxiety at the core of many psychopathological conditions, including OCD (Iverach et al., 2014).

Abdel-Khalek (1998) has since introduced the construct of death obsession and associated it with death anxiety. However, his effort was not meant to resolve the problem of linearity with regard to whether death anxiety precedes or succeeds psychopathology. The aim of this study was to contribute in establishing the role of death obsession in prenatal OCD. The study determines the nature of the relationship between death obsession, pregnancy-related anxiety, and prenatal OCD in pregnant women attending their prenatal check-ups in the Capricorn District, Limpopo Province. In particular, the possible mediational role of death obsession is explored.

Method

Participants

Participants for the study were drawn from health facilities in the Polokwane area. The identified facilities were selected because of their accessibility with regard to data collection. Management in those facilities readily agreed that data can be collected. Participants were recruited through convenience sampling, a type of non-probability sampling. The sampling design was inexpensive and easy to implement, especially because of the difficulty of conducting random sampling in the context of a day care health facility. For instance, total lists (sampling frames) are fluid. However, it was pragmatic to approach clinic attendees on the days that they were scheduled to consult with medical professionals.

The final sample included 206 pregnant women presenting for their perinatal check-ups at Mankweng Hospital, and Mankweng, Nobody, and Rethabile Clinics. The mean age of the participants was 27.69 ($SD = 5.98$, range = 14–45). Most (63%) of them came from rural areas. The majority (56%) had planned their pregnancies, were multigravida (67%), and only 30% were primagravida. Miscarriage was the highest (25%) reported complication in the previous pregnancy, while stillbirth was the lowest (2%) reported complication. Most of the pregnant women sought medical check-ups either very often (27%) or fairly often (45%). The participants reported complications during the pregnancy, with most of them experiencing either high blood pressure or back or abdominal pains (4% each for each complication).

Instruments

Demographic information. Participants' demographic information was obtained through a self-designed questionnaire. Information was collected on participants' age, marital status, social class, residential area, as well as past and current gestational history.

Death Obsession Scale. The Death Obsession Scale (DOS) was developed by Abdel-Khalek (1998) to measure death obsession. So far, it is the only measure of death obsession. Participants

were asked to endorse statements on a 5-point scale ranging from 'No' (1) to 'Very much' (5). The total scores ranged from 15 to 75, with higher scores denoting higher death obsession. The scale demonstrates high internal consistency, test–retest reliability, and construct and discriminant validity (Abdel-Khalek, 1998). An evaluation of the scale's psychometric properties in South Africa concluded that they were largely sufficient (Mashegoane & Makhubela, 2016). Confirmatory factor analysis demonstrated that the South African male and female students' models fitted the data well and tended to suggest that the scale was unidimensional; and the reliability level of the total scale was excellent at $\alpha = .91$. Mashegoane and Makhubela (2016) observed, based on construct validity, that the scale total is the best score to use for analysis. In this study, the DOS displayed a high level of internal consistency as the general reliability of the scale was found to be $\alpha = .92$.

PRAS. The PRAS was developed in 1999 by Rini and colleagues. The scale is used to assess a woman's pregnancy-related anxieties that include apprehensions about her baby's health, her own health, and labour and delivery. The participants were required to read statements on a 4-point scale ranging from 'Not at all' (1) to 'Very much' (4). The scale has 10 items and possible scores range from 10 to 40. According to Rini et al. (1999), PRAS is a reliable measure which was specifically developed for use in pregnancy research ($\alpha = 0.75$–0.85) (Blair et al., 2011; Buss et al., 2011; Glynn et al., 2008). Internal consistency in this study was $\alpha = .70$.

Obsessive-Compulsive Inventory–Revised. The Obsessive-Compulsive Inventory–Revised (OCI-R) is an 18-item self-report scale designed to measure the degree of distress caused by OCD symptoms (Foa et al., 2002). Participants are asked to endorse statements on a 5-point scale ranging from 'Not at all' (0) to 'Extremely' (4) and the total score ranges from 0 to 72. Examples of items in the OCI-R scale include 'I check things more often than necessary' and 'I sometimes have to wash or clean myself simply because I feel contaminated'. The scale has enjoyed wide use and validation across the world in its original and translated forms (e.g., Chasson et al., 2013; Zermatten et al., 2006). The OCI-R measures OCD on a 6-factor structure which includes the dimensions of Washing, Checking, Obsessions, Neutralising, Ordering, and Hoarding. Its factor structure was reproduced among African Americans, although the proposed cut-off score for the group was relatively high (Williams et al., 2013). The internal consistency of each of the subscales ranged from .57 to .93 (Huppert et al., 2007; Williams et al., 2013). Furthermore, it has convergent, divergent, and criterion-related validity (Chasson et al., 2013; Foa et al., 2002; Zermatten et al., 2006).

With regard to this study, the total OCI-R scale demonstrated high internal consistency at $\alpha = .866$. The reliability levels of the subscales were either modest or low: Washing, $\alpha = .556$, Obsessing, $\alpha = .427$, Hoarding, $\alpha = .627$, Ordering, $\alpha = .580$, Checking, $\alpha = .596$, and Neutralising, $\alpha = .527$. The obsessing subscale was retained to preserve its integrity, especially because the reliability of $\alpha = .43$ is usable. The results of low reliability are not uncommon among non-clinical samples (Foa et al., 2002). Moreover, it is our view that for reasons yet to be explained, reliability levels of many scales developed in developed countries tend to be comparatively low when used among Black African samples in South Africa. Yet the scales are useful for predictive purposes.

Procedure

Prospective participants were approached individually while queuing for service at a medical facility. Facilities covered included Mankweng Hospital, and the Nobody, Mankweng, and Rethabile

Clinics. The study was explained in general terms. Participants were assured confidentiality of their responses and identities, and their right to withdraw without any penalty. Those who were conversant in English and agreed to take part signed a consent form prior to filling any of the study questionnaires. The questionnaires, which were quantitative in design, were completed while waiting to enter the consulting rooms. Data were collected at a single time point, with no repeat administration. A decision was taken to control for language by limiting respondents to those who had a reading knowledge of the English language because the scales were not translated to local languages. Twenty-eight pregnant women were omitted from filling the questionnaires because they were not fluent in the English language.

Ethical clearance

Ethical clearance for the study was provided by the University of Limpopo's Turfloop Research and Ethics Committee.

Data analysis

The Statistical Package for Social Sciences (IBM SPSS, version 25) was used to conduct all the initial analyses in the study. Descriptive analysis was conducted to describe the sample. Pearson product-moment correlation coefficient analysis was used to determine if there was any relationship between the variables, particularly on the linear relationship between pregnancy-related anxiety, death obsession, and prenatal OCD. The main analysis involved determining the mediational role of death obsession, using the PROCESS macro developed by Hayes (2018).

Results

Correlations between the main study variables

All the variables of the study were correlated against each other, and the results are contained in Table 1. Social class, planned pregnancy, and first pregnancy were negatively associated with age ($r = -.15$ to $-.33$, $p \leqslant .001-.028$). A correlation was also found between first pregnancy and planned pregnancy ($r = .15$, $p \leqslant .05$) as well as current pregnancy complication and planned pregnancy ($r = .14$, $p \leqslant .05$). The number of weeks a woman was pregnant as well as medical check-up were not correlated with any of the main scales measuring pregnancy-related anxiety, death obsession, and prenatal OCD ($p > .05$).

  All the OCI-R subscales including washing, obsessing, hoarding, ordering, checking, and neutralising indicated a significant positive association to each other. This, however, is expected in that the subscales will correlate with the scale because they are the ones constituting it ($r = .42-.80$, $p \leqslant .05$). Death obsession and planned pregnancy were positively associated ($r = .20$, $p = .004$); moreover, death obsession was also positively correlated with all the OCI-R subscales ($r = .16-.26$, $p \leqslant .001-.021$). A significant positive association was found between Pregnancy-Related Anxiety and planned pregnancy ($r = .15$, $p = .031$). Pregnancy-related anxiety was also found to be associated with all the OCI-R subscales ($r = .23-.34$, $p \leqslant .001$), one more correlation was between pregnancy-related anxiety and death obsession ($r = .24$, $p = .001$). The results of correlation analysis show that there is a linear relationship between prenatal OCD, the independent variable, and correlates such as pregnancy-related anxiety and death obsession.

Table 1. Correlation analysis (N = 206).

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	Age	I															
2.	Social class	−.15*	I														
3.	Planned pregnancy	−.22***	−.01	I													
4.	First pregnancy	−.33***	.13†	−.15*	I												
5.	Weeks pregnant	.01	.00	.10	−.06	I											
6.	Current complications	−.07	−.01	−.14*	−.00	.13†	I										
7.	Medical check-up	−.09	.02	−.02	−.12†	−.02	.01	I									
8.	OCI-R Total	.13†	.08	−.08	.01	.11	.02	−.06	I								
9.	OCI-R Washing	.09	.08	−.05	.06	.16**	.07	−.02	.80***	I							
10.	OCI-R Obsessing	.12†	−.01	−.14*	.07	.07	.04	−.08	.78***	.67***	I						
11.	OCI-R Hoarding	.11	.06	−.07	.01	.12	−.04	−.07	.79***	.52***	.53***	I					
12.	OCI-R Ordering	−.03	.10	−.05	.11	.07	.02	−.09	.69***	.55***	.44***	.42***	I				
13.	OCI-R Checking	.20**	.04	−.04	−.08	.05	−.07	−.10	.79***	.49***	.49***	.71***	.47***	I			
14.	OCI-R Neutralising	.02	.10	−.04	−.01	.09	.02	−.03	.76***	.50***	.41***	.54***	.60***	.57***	I		
15.	Death obsession	.01	−.09	−.20***	−.04	−.06	.09	−.01	.26***	.16*	.26***	.22***	.18**	.19**	.23***	I	
16.	Pregnancy-related anxiety	−.12†	.13†	−.15*	.12†	.03	−.03	−.07	.34***	.29***	.30***	.23***	.27***	.24***	.26***	.24***	I

OCI-R: Obsessive-Compulsive Inventory–Revised.
†.10, *.05, **.01, ***.001.
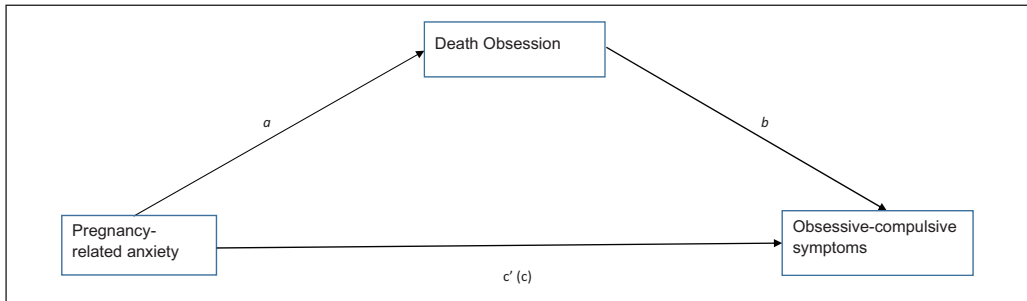
Figure 1. Hypothesised mediation model.
c′: indirect effect; c: direct effect.

The mediator role of death obsession in the relationship between pregnancy-related anxiety and prenatal OCD

The next level of analysis involved conducting mediation analyses (Hayes, 2018). Figure 1 displays the relevant assessed relationships, and Table 2 shows the results of mediation analyses. Path c′ in Figure 1 is referred to as the indirect effect. Its value is used to determine mediation. Partial mediation occurs when the path from pregnancy-related anxiety to prenatal OCD reduces in absolute size but still differs from zero when death obsession, the mediator or process variable, is introduced. Complete mediation shall have occurred when pregnancy-related anxiety no longer affects prenatal OCD after death obsession has been controlled, reducing path c′ to zero. In practice, mediation is assessed in different ways. Whereas the popular, traditional method proposed by Baron and Kenny (1986) focuses on the significance of paths, there are approaches that measure the indirect effect. One such method proposes that mediation should be measured by evaluating the indirect effect and its significance, and obtaining its confidence interval, using bootstrap methods (Hayes, 2018; Kenny, 2018; Preacher & Hayes, 2004).

The results of mediation analysis are contained in Table 2. Mediation is inferred in instances where the confidence interval of the indirect effect does not contain a zero (Hayes, 2018; Preacher & Hayes, 2004). The results as contained in Table 2 indicate that in all but two instances, the conditions for mediation were met, with death obsession serving as the mediator. In other words, pregnancy-related anxiety significantly predicts death obsession, and death obsession predicts the composite prenatal OCD. Inspection of the indirect effect shows that there was an indirect effect of pregnancy-related anxiety on the composite prenatal OCD scores, $b = .098$, BCa CI [.026, .211]. Effect size was also inspected and was found to support the main observation; the standardised b for the indirect effect was $b = .045$, 95% BCa CI [.013, .098].

The pattern of results repeats for most of the components of prenatal OCD: there was an indirect effect of pregnancy-related anxiety on OCI-R Obsessing, $b = .023$, BCa CI [.007, .050], effect size $= b = .05$, 95% BCa CI [.015, .102]; indirect effect of pregnancy-related anxiety on OCI-R Hoarding, $b = .017$, BCa CI [.003, .040], effect size $= b = .040$, 95% BCa CI [.008, .093]; indirect effect of pregnancy-related anxiety on OCI-R Checking, $b = .018$, BCa CI [.002, .045], effect size $= b = .034$, 95% BCa CI [.003, .091]; and the indirect effect of pregnancy-related anxiety on OCI-R Neutralising, $b = .018$, BCa CI [.005, .043], effect size $= b = .043$, 95% BCa CI [.011, .099]. The indirect effect of pregnancy-related anxiety on OCI-R Washing, $b = .011$, BCa CI [−.003, .034], effect size $= b = .023$, 95% BCa CI [−.006, .070], and OCI-R Ordering, $b = .013$, BCa CI [−.002, .037], effect size $= b = .028$, 95% BCa CI [−.006, .080] was not demonstrated.

Table 2. Direct and indirect effects of pregnancy-related anxiety, death obsession, and obsessive-compulsive symptoms.

Outcome variable	Path a = b (SE)	Path b = b (SE)	Direct effect = b (SE)	Indirect effect = b [95% BCa CI]	Effect size
OCI-R Composite score	.552 (.159)***	.177 (.063)**	.653 (.146)**	.098 [.026, .211]	.045 [.013, .098]
OCI-R Washing	.552 (.159)***	.021 (.015)	.131 (.033)***	.011 [−.003, .034]	.023 [−.006, .070]
OCI-R Obsessing	.552 (.159)***	.042 (.014)***	.123 (.033)**	.023 [.007, .050]	.047 [.015, .102]
OCI-R Hoarding	.552 (.159)***	.031 (.013)**	.082 (.030)**	.017 [.003, .040]	.040 [.008, .093]
OCI-R Ordering	.552 (.159)***	.023 (.013)†	.110 (.031)**	.013 [−.002, .037]	.028 [−.006, .080]
OCI-R Checking	.552 (.159)***	.030 (.015)*	.100 (.034)*	.018 [.002, .045]	.034 [.003, .091]
OCI-R Neutralising	.552 (.159)***	.033 (.013)**	.093 (.029)***	.018 [.005, .043]	.043 [.011, .099]

Direct effect: path c of the model; indirect effect: path c′; b (SE): the coefficient and its standard error; b [95% BCa CI]: the coefficient and the 95% bias corrected and accelerated confidence interval; OCI-R: the revised version of the obsessive-compulsive inventory.
†.10, *.05, **.01, ***.001.

Discussion

Pregnancy-related anxiety and death obsession

The results of this study show that there is an association between pregnancy-related anxiety and death obsession. In spite of this clear association between the two concepts, the literature review established that there are no studies of death obsession done in the context of pregnancy. This is surprising because researchers are aware of the element of the fear of death in pregnancy; they include items referring to death fear and cogitations in scales that measure pregnancy-related anxiety (Blackmore et al., 2016; Rini et al., 1999). Even as items referring to the fear of death are included in scales, no attempt is made to systematically link such to death anxiety and its derivations such as death depression (Templer et al., 1990) and death obsession (Abdel-Khalek, 1998).

Although there are no studies investigating death obsession in the context of pregnancy, some studies point to a relationship between the construct and general anxiety and related conditions (Abdel-Khalek, 1998; Abdel-Khalek & Maltby, 2008; Maltby & Day, 2000). Abdel-Khalek and Maltby (2008) have shown that general anxiety may fuel or even predict death obsession. Pregnancy-related anxiety is somewhat associated with general anxiety (Blackmore et al., 2016). It is for that reason that the studies on general anxiety are presumed to provide support for the observed association between death obsession and pregnancy-related anxiety in this study.

It must be pointed out that even though death obsession and pregnancy-related anxiety have some similarities, they are not necessarily equivalent. A feature unique to pregnancy-related anxiety is that it is characterised by concerns that are specific to pregnancy. Some of the reasons the anxiety may occur are inexperience in pregnancy and fear that the delivery may not go well (Adewuya et al., 2006).

Besides the common factor between the pregnancy-related anxiety and death obsession, this study argues that the relationship between these seemingly unrelated variables, death obsession, and pregnancy-related anxiety occurs when a pregnant woman becomes continuously anxious about the likelihood of losing her unborn child. The excessive and continuous fear and anxiety of the death of one's unborn baby (possibly through miscarriage or stillbirth) could probably lead to death obsession. Abdel-Khalek (1998) stated that death obsession is a term that expresses the fear

and preoccupation people hold over the death of the self or a loved one. For the pregnant women suffering from pregnancy-related anxiety, their preoccupation is the anxiety of foetal death. The above statements are supported by items from a number of scales making reference to the fear of losing the unborn child (Blackmore et al., 2016; Rini et al., 1999) as well as studies that made reference to the anxiety that pregnant women have or experience over foetal loss (Bayrampour et al., 2016; Mortazavi & Akaberi, 2016).

Death obsession and prenatal OCD

Results of this study found an association between death obsession and prenatal OCD. Although studies in the literature pertain to death anxiety, and not death obsession per se, they can be used to justify the association between the latter and prenatal OCD. Death anxiety is theoretically the precursor to death obsessions. Freud tied OCD to the fear of one's own death (Meares, 2001). Theorists, from Melanie Klein, Ernest Becker, to composers of the fairly modern Terror Management Theory, place death anxiety at the base of human development (Blass, 2014). Moreover, the fundamental fear is considered to be the 'worm at the core' of many mental disorders (Blass, 2014; Iverach et al., 2014). Death anxiety also has the capacity to explain medical conditions and medically unexplained symptoms (aan de Stegge et al., 2018). Abdel-Khalek (1998) has argued on the grounds of theory and demonstrated empirically that, at the least, death obsession is associated with death anxiety. The result has been supported by a number of subsequent studies (Maltby & Day, 2000; Tomás-Sábado & Gómez-Benito, 2004).

The relationship between death anxiety and OCD has received empirical backing. Menzies et al. (2015) established that most obsessional presentations found in patients can be readily linked to death fear. There is a belief that most obsessive-compulsive tendencies such as fear of germs, toxins, or disease are semantically associated with concern about the death of self or loved ones (Iverach et al., 2014). The literature on death anxiety and general OCD can apply to the pregnancy context. The common obsessions reported by pregnant women, such as the fear of contamination with any kinds of toxins, micro-organisms, or germs (Forray et al., 2010; Vousoura, 2010), emanate from the fear that the contaminants may cause the death of the unborn baby. The ritualistic behaviour of washing is a means to minimise the anxiety related to the fear of the unborn baby's death.

Pregnancy-related anxiety and prenatal OCD

Another finding of this study pertains to the association between pregnancy-related anxiety and prenatal OCD. Observations have always been made that some kind of relationship exists between OCD and anxiety disorders. For instance, anxiety disorders are one of the disorders that are commonly comorbid with OCD (Kaya et al., 2015). Kaya et al. (2015) stated that generalised anxiety disorder was the most prevalent comorbid disorder among their patient sample with pregnancy onset OCD. They postulated that the high rate of the disorder may have been related to the pregnancy itself.

Furthermore, Kaya et al. (2015) pointed out that those participants in their study with an anxiety disorder at the onset of the pregnancy as well as obsessive-compulsive personality disorder had an increased risk of new-onset OCD during pregnancy. Correlates of death obsession are not limited to anxiety disorder, but general anxiety too (Abdel-Khalek & Maltby, 2008). Abdel-Khalek and Maltby (2008) observed the association across cultures. Although these studies do not refer to pregnancy-related anxiety and prenatal OCD specifically, they nevertheless can be inferred to support the association of the latter.

The following observations about the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*) bolster the argument for the relation between anxiety disorders and OCD.

Although OCD is currently a disorder distinct from anxiety disorders in the *DSM*-5 (American Psychiatric Association, 2013), it was previously classified as an anxiety disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM*-IV-TR; American Psychiatric Association, 2000). This in itself points to some kind of association between the two disorders. In any case, the *DSM*-5 itself recognises the relationship between the disorders and places the Obsessive-Compulsive and Related Disorder chapter immediately after that of anxiety disorders for the same reason.

The mediator role of death obsessions

The novel part of this study is its investigation of the mediator role of death obsessions in the pregnancy-related anxiety and prenatal OCD relationship. Death obsession was identified as a mediator because of its close association with death anxiety. Studies have fallen short in establishing the complete uniqueness of the death obsession construct when factor analysed together with death depression and death anxiety (Abdel-Khalek, 2012). Maltby and Day (2000) found that death attitudes, inclusive of death obsession, correlated more with each other than they did with their equivalent concepts of general anxiety, depression, and obsessionality. In his construction of the DOS, Abdel-Khalek (1998) remarked that it is an additional element of the triadic death distress construct that comprises death depression and death anxiety. Indeed, death obsession, together with death anxiety and death depression, loaded high on a general factor of death distress (Abdel-Khalek, 2012).

Although the relationship between anxiety, obsession, and OCD was established, research has not dwelt on the issue of directionality. This is more the case where the three variables occur simultaneously. In one instance where directionality was specified, Abdel-Khalek and Maltby (2008) found that death anxiety was a predictor of death obsession. Thus, this study theorised that death obsessions would serve as a mediator in the pregnancy-related anxiety-prenatal OCD association. The results are promising, in that some mediational effect, albeit minimal, was detected.

There are a number of limitations to this study. The main one should be the use of measures that have not been standardised for the South African context. Only the DOS has undergone some form of validation (Mashegoane & Makhubela, 2016). The rest of the scales were imported from non-African contexts where they were developed. This may have affected scale performance, and the results in ways that we may not have seen. A scale such as the OCI-R has already been found to operate differently when used among African Americans (Williams et al., 2013), a group with some similarities with continental Africans. The factor structure of the scale is yet to be confirmed in the African context. The study design was also a limitation in that a cross-sectional design cannot be used to establish a causal relationship. Mediational analysis does not compensate for lack of longitudinal data. Furthermore, the data of this study were gathered from self-report, closed-ended questionnaires. Interview or observational methods were not used.

Conclusion

This study found that an association exists between death obsession and both pregnancy-related anxiety and prenatal OCD. The associations were observed in the general variants of the concepts. In this study, it was demonstrated that the relationships can be transferred to a pregnancy context. The mediational effect of death obsessions was rather small, suggesting that more work needs to be done. The design of studies has to be well thought out, scales need to be inspected closely in terms of their precision of capturing the constructs, and the suitability of analytic strategies have to be determined. For instance, a longitudinal design would be more effective in assessing for

mediation. Also important, the studies have to be conducted in other provinces of South Africa to increase the generalisability of the results.

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