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Psychological distress among men suffering from couple infertility in South Africa: a quantitative assessment

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BACKGROUND: Recent years have seen a growing interest in the impact of infertility on reproductive health in developing countries. Most of the research which has addressed the psychosocial consequences of infertility in African countries has been qualitative in nature and focused on women. It was the aim of this study to assess psychological distress quantitatively in men suffering from couple infertility living in an urban community in South Africa.

METHODS: The Symptom Checklist-90-R, a standardized instrument for the measurement of current psychological symptom status, was administered to 120 men upon first presentation to a public health sector infertility clinic (study group) in a tertiary referral centre. The control group comprised 120 men who attended an antenatal clinic with their partner. All men may have previously fathered a child. Raw test scores were converted into standard area T scores and analyzed further.

RESULTS: Participants in the study group differed in their psychological symptom status when compared with controls. Male partners of infertile couples had significantly elevated mean T scores for all nine primary symptom dimensions as well as the three global markers of distress ($P < 0.0001$ versus control), but these did not exceed the upper range of normal.

CONCLUSIONS: When compared with controls, male partners of infertile couples experienced elevated levels of psychological distress, but without, on average, suffering from psychopathology. A comparison with qualitative studies from African countries and with quantitative studies from the Western industrialized world revealed both similarities and differences. Understanding and addressing the male perspective of infertility is an important component of infertility management.

Key words: infertility / psychological distress / men / quantitative research / Africa

Introduction

Recent years have seen a growing interest in the impact of infertility on reproductive health in Africa and other developing regions. This interest is fuelled by a better understanding of the magnitude of the problem of involuntary childlessness in low resource settings, which is commonly characterized by a high prevalence and limited treatment options. In addition, several studies have documented the profoundly negative psychological and social implications associated with infertility in developing countries, which, despite considerable differences in the socio-cultural background of the different regions, are often surprisingly similar. According to reports from sub-Saharan Africa and Asia, repercussions of infertility include marital instability, abandonment, loss of social status and security, abuse, poverty and stigmatization (Papreen *et al.*, 2000; Riessman, 2000; Runganga *et al.*, 2001; Dyer

et al., 2002; Geelhoed *et al.*, 2002; Hollos, 2003; Inhorn, 2003a; Umezulike and Efetie, 2004).

With a few exceptions, the existing data are generated from qualitative studies. Moreover, most studies have focused on the experience of women in the understanding that they carry the main burden of the infertility experience. As a result, there is limited information from developing countries on the experience of men suffering from couple infertility. In addition, quantitative studies measuring the psychological sequelae of infertility are lacking. To address this information gap, we aimed to assess whether men who were living in an urban community in South Africa and were suffering from couple infertility had higher levels of distress when compared with controls. Psychological symptom status was measured through a standardized instrument, the revised Symptom Checklist-90 (SCL-90-R). This instrument was selected as it had been utilized in a previous study conducted at our institution involving infertile women, as well as in a few studies from industrialized countries which

evaluated infertility-related psychological distress (Berg and Wilson, 1990; Downey and McKinney, 1992; Wischmann *et al.*, 2001; Dyer *et al.*, 2005). We expected that the findings of this study would expand our understanding of men's reality of involuntary childlessness, thereby providing relevant information regarding their needs in the context of infertility management. In addition, we anticipated that comparison with the previous studies using the same research instrument would offer insight on how gender and the socio-cultural context influenced the psychological domain of the infertility experience.

Materials and Methods

The study was conducted at a referral infertility clinic which provides comprehensive treatment, including assisted reproduction techniques, in an academic and public health centre in Cape Town, South Africa, as previously described (Dyer *et al.*, 2002, 2005). Briefly, the public health system in South Africa offers health care to all patients who cannot afford or do not wish to access private facilities. The system is structured into primary, secondary and tertiary levels of care. Primary health care facilities can, in principle, be freely accessed subject to the payment of a fee which is tiered according to income. The other levels of care may be accessed following referral or in specific emergency situations. Most of the patients within the public health system are from local, low-resourced communities. The community of Cape Town consists of three major ethnic groups. Approximately half of the population is of mixed ancestry (locally referred to as 'coloured'), whereas 31.7% are black Africans and 18.8% are white. The languages most commonly spoken are Afrikaans, Xhosa and English. The dominant religious affiliations are Christianity (85%) and Islam (13%) (Statistics South Africa, 2001).

Data were collected between May and August 2005. The study group consisted of 120 men suffering from couple infertility. Participants were recruited at the time of a couple's first visit to the infertility clinic. In our clinical setting infertility management is conducted at tertiary care facilities and participants had therefore not received treatment prior to enrolment (although initial investigations may have been performed elsewhere) unless they had previously accessed private care. In order to increase study validity, a control group was added. This comprised 120 men who accompanied their female partners, who had documented low risk pregnancies, for a routine antenatal visit to a primary care clinic or for a routine 20 week ultrasound scan to a referral health care service.

Recruitment and data collection were conducted by two multi-lingual professional nurses who were trained in research and who were not part of the clinical infertility or obstetric services. Informants were recruited consecutively but subject to the presence of one of the research nurses at the clinic. Study eligibility included willingness to participate and the ability to converse in English, Afrikaans or Xhosa. Interviews were conducted in a private setting at the clinics, and a two-part questionnaire was administered. The first part captured data on socio-demographic characteristics, and in the second part psychological distress was measured using the SCL-90-R. The same questionnaire was administered to all participants, with the exception of a question addressing the duration of infertility which was only posed to informants in the study group. The entire questionnaire was translated into Afrikaans and Xhosa and then re-translated into English to ensure accuracy of the translation. Participants were interviewed in their preferred language. Informants who reported high levels of distress were counselled immediately after the interview and referred for appropriate psychological support.

The SCL-90-R is a 90-item symptom inventory designed to capture current psychological symptom status in men and women. It is therefore a marker of state (as opposed to trait) distress. Although intended as a self-report measure, the test was administered in order to facilitate understanding and because of a high rate of functional illiteracy in our community. Each test item is rated on a five-point scale of severity. The test contains nine primary symptom dimensions (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism) and three global indices of distress. The latter are markers of number and intensity of reported symptoms (Global Severity Index), symptom intensity (Positive Symptom Distress Index) and symptom breadth (Positive Symptom Total). The test generates raw scores which are converted into standard area T scores through a test inherent norm group. It is a characteristic of the T score distribution that it has a mean of 50 and a SD of 10. A T score of 70 is thus two SDs above the mean. Higher scores are indicative of higher degrees of psychological distress. Area T scores furthermore correlate with centile equivalents. A T score of 60 places the respondent in the 84th centile of the test norm group, whereas a T score of 70 has a centile equivalent of 98. Test items do not differ between men and women but data analysis (i.e. the conversion of raw scores to T scores) is gender specific.

The sample size was based on a power analysis. There was, however, a lack of data from which the event rate (i.e. psychological distress measured through the SCL-90-R) could be estimated in either of our two groups. We thus hypothesized that 20% of the control group would have elevated scores on one or more of the SCL-90-R subscales and that male partners of infertile couples would be twice as likely to experience distress. Accordingly, 91 informants were required in each group to power the study at 80% ($\alpha = 0.05$; $\beta = 0.20$). In order to accommodate a degree of error in the hypothesized event rate, a decision was taken to recruit a total of 240 participants. Importantly, we used the same power analysis and underlying assumptions as in our earlier study involving women, and in this previous study the sample size had been sufficient to demonstrate significant differences between infertile women and controls (Dyer *et al.*, 2005).

The study was approved by the Ethics Committee of the Faculty of Health Sciences, University of Cape Town, and written informed consent was taken from all participants.

Statistical analysis

For comparison of the socio-demographic characteristics between groups Student's *t*-test and χ^2 test statistics were applied. Due to a skewed distribution of data, the Wilcoxon rank sum test was used to assess differences of T scores between groups. The effect size of between-group differences of T scores was calculated using the standardized mean difference (SMD). A SMD of 0.5 was considered indicative of a medium effect; values above 0.5 were interpreted as a large effect.

In the presence of significant group differences in the socio-demographic variables, linear regression analysis was conducted in order to assess the impact of these variables on the T scores.

Results

Socio-demographic characteristics

Table I summarizes the socio-demographic characteristics of the participants. Male partners of infertile couples were older, more likely to be married, and had lower levels of education when compared with men in the control group ($P < 0.05$). The two groups were comparable with regard to home languages and religious denominations (data not shown). As expected, men in the study group were more often childless when compared with the control group ($P < 0.05$). The

Table I Socio-demographic characteristics of male partners of infertile couples (study group) and men who attended antenatal clinic with their partner (control group)

	Study group N = 120		Control group N = 120		P-value**
Age (years)					
Mean	33.3		29.5		<0.05
Range	22–58		20–49		
Live children	N	%	N*	%	
Yes	49	40.8	76	63.3	<0.05
No	71	59.2	41	34.2	
Marital status	N	%	N	%	
Married by law	95	79.2	82	68.9	<0.05
Married by religious/ cultural practices	8	6.7	2	1.7	
Common law marriage	17	14.2	35	29.2	
Education	N	%	N	%	
1–7 years of education	23	19.2	3	2.5	<0.05
8–12 years of education	70	58.3	74	61.7	
Tertiary education	27	22.5	43	35.8	

*Missing data: $n = 3$. **Student's t-test and χ^2 test statistics.

majority of infertile informants who had at least one live child were childless in their current relationship.

Psychological symptom status

The results of the SCL-90-R are presented in Table II. Data are presented as mean T scores plus SDs. The mean differences plus confidence intervals as well as the effect size are also reported.

In the control group the mean T scores centred closely around 50 (which is the mean of the SCL-90-R norm group). In contrast, the mean T scores in the study group were consistently elevated, but remained within one SD of the mean of the SCL-90-R norm group (i.e. below 60). The highest scores were recorded on the paranoid ideation scale, followed by the interpersonal sensitivity scale and the Global Severity Index, the psychoticism scale and then the depression scale. The paranoid ideation scale captures paranoid behaviour as a disordered mode of thinking ranging from hostility, suspiciousness and fear of loss of autonomy to delusions and feelings of grandiosity (Derogatis, 1994). The interpersonal sensitivity dimension captures feelings of inferiority and inadequacy, and, in the higher scores, negative expectations in interpersonal situations. Although the psychoticism scale captures schizoid psychosis at its extreme end, the scale also reflects social alienation in its lower ranges. The lowest score for male partners of infertile couples were on the somatization scale, which captures distress arising from perceived bodily dysfunctions (Derogatis, 1994). The items of this scale do not, however, include reproductive system symptoms.

The range of the SDs were similar between the two groups of informants indicating similar variability in the data. The SDs furthermore reflect that men in both groups scored along a continuum of

psychological functioning, ranging from low to high levels of psychological distress.

The between-group comparison of the mean T scores demonstrated significant differences for all primary symptom dimensions as well as the three global markers of distress ($P < 0.0001$, Table II). The mean difference in T scores ranged from 5.1 (anger-hostility) to 9.6 (Global Severity Index). These differences were in keeping with medium to large standardized effect sizes. After controlling for age, marital status and educational levels, the differences in the adjusted T scores between the two groups remained significant on all sub-scales.

Discussion

To the best of our knowledge this is the first study from South Africa, or any other African country, which measured current psychological distress in men suffering from couple infertility. Our results demonstrate that male partners of infertile couples differed significantly in their acute psychological symptom status when compared with male partners of pregnant women. Higher mean levels of distress were observed in the study group across the entire range of the applied instrument. Mean levels did not, however, exceed the upper range of normal and were therefore not indicative of disordered psychological functioning. At the same time the higher mean scores in the study group imply that, when the SDs are taken into account, more men in the study group experienced clinically significant psychological distress when compared with the control group (i.e. T scores > 60).

There is a paucity of data from African countries with which to compare our findings. The limited data on the male experience of infertility in Africa have, to date, been exclusively derived from qualitative studies. Previous research conducted in our own institution documented that male partners of infertile couples expressed a deep desire for a child and experienced intense, negative emotions. Moreover, many men reported detrimental social consequences, including ridicule, stigmatization and loss of social status (Dyer et al., 2004). These findings are in keeping with qualitative studies conducted in other African countries, according to which infertility frequently affects men's gender identity, self-esteem and social status, and results in public humiliation and stigmatization (Runganga et al., 2001; Inhorn, 2003b; Barden-O'Fallen, 2005).

Qualitative and quantitative studies therefore agree that infertility is a distressing experience for men. At the same time our quantitative data depict a male reality of infertility that is perhaps less negative and distressing than what has been reported from qualitative research. The observation that quantitative studies may not reflect the intensity of infertility-related psychosocial distress described in qualitative research has been previously reported from Western industrialized countries (Berg, 1994; Greil, 1997). It is possible that standardized, generic instruments for the measurement of psychological distress lack sensitivity in the context of infertility (Berg, 1994). Moreover, men may underreport infertility-related distress due to masculinity norms which prevent them from expressing their emotions, and quantitative questionnaires may be more susceptible to this bias (Cousineau and Domar, 2007). Qualitative and quantitative studies are, however, complementary and not competing research methods. In this context our research indicates that most men living in our communities are exposed to negative emotional and social consequences

Table II Mean T scores among study group (male partners of infertile couples) and control group (men who attended antenatal clinic with their partner)

SCL-90-R scales	Study group[a]	Control group[a]	P-value	Mean difference	95%CI[b] lower limit	95%CI upper limit	Standardized effect size
Somatization	53.6 (11.6)	47.3 (8.6)	<0.0001	6.3	3.7	8.9	0.73
Obsessive compulsive	57.9 (11.4)	51.6 (10.6)	<0.0001	6.3	3.5	9.1	0.59
Interpersonal sensitivity	59.7 (10.8)	51.2 (10.3)	<0.0001	8.5	5.8	11.2	0.82
Depression	58.7 (10.3)	50.1 (9.5)	<0.0001	8.6	6.1	11.1	0.90
Anxiety	56.2 (11.9)	47.1 (9.8)	<0.0001	9.1	6.3	11.9	0.92
Anger—hostility	55.7 (10.9)	50.6 (9.7)	<0.0001	5.1	2.5	7.7	0.52
Phobic anxiety	58.2 (11.1)	50.6 (8.6)	<0.0001	7.6	5.1	10.1	0.88
Paranoid ideation	59.8 (10.0)	52.0 (11.0)	<0.0001	7.8	5.1	10.5	0.70
Psychoticism	58.9 (10.5)	50.0 (8.5)	<0.0001	8.9	6.5	11.3	1.04
Global severity index	59.7 (10.7)	50.1 (10.5)	<0.0001	9.6	6.9	12.3	0.91
PSDI[c]	56.9 (10.7)	50.8 (12.0)	<0.0001	6.1	3.2	9.0	0.50
Positive symptom total	58.2 (9.0)	50.3 (10.2)	<0.0001	7.9	5.5	10.3	0.77

[a]Values are unadjusted mean T scores (SD); revised Symptom Checklist-90 (SCL-90-R) norm group: mean = 50.
[b]Confidence interval.
[c]PSDI = Positive Symptom Distress Index.

associated with involuntary infertility but they do not, on average, suffer from abnormally high levels of psychological distress or psychopathology. For some individuals infertility is, however, associated with excessive levels of distress. It may be hypothesized that these men are particularly vulnerable to the negative consequences of infertility and/or have fewer coping skills to address these.

In contrast to the absence of data from African countries, a large number of studies from the industrialized world have measured infertility-related distress. A discussion of this literature is beyond the scope of this manuscript, but we identified three studies which utilized the same research instrument and which invite comparison with our data (Daniluk, 1988; Berg and Wilson, 1990; Wischmann *et al.*, 2001). In these studies, which involved infertile couples living in Europe and North America, male partners showed T score elevations on few of the SCL-90-R subscales with levels not exceeding 60. In addition, differences between male and female partners were small. Our results are in keeping with these findings to the extent that the mean T scores of male partners of infertile couples did not exceed the upper range of normal. Our data reflect, however, a greater width of distress as significant T score elevations were observed on all of the SCL-90-R scales.

Caution must be exercised in the interpretation of this comparison, owing to the differences in research methods and cultural settings between studies. Moreover, we did not interview couples as our research focus was on men. We have, however, reported in an earlier study that women with couple infertility had significantly higher levels of distress when compared with women not currently infertile, with mean T scores exceeding 60 on all but one of the SCL-90-R subscales (Dyer *et al.*, 2005). This would suggest that in our community women may experience a greater degree of distress secondary to infertility when compared with men. These observations are in keeping with the perception that in South Africa (and other African countries) women carry the main burden of infertility,

without ignoring the fact that men also experience distress. The time difference between our two studies and the fact that we evaluated individuals and not partners limits the comparability of our data. Further studies are required in order to assess how gender influences infertility-related distress in our communities.

The finding of elevated levels of distress among male partners of infertile couples has several relevant implications. In the first instance, distress may influence the success of infertility management. Studies from Western industrialized countries have documented that couples frequently discontinue infertility treatment prematurely and that elevated levels of psychological distress is a common reason (Rajkhowa *et al.*, 2006; Cousineau and Domar, 2007). High rates of treatment drop-out are of concern as they perpetuate reproductive ill-health and may waste health resources. The latter is particularly worrisome in low resource settings where facilities are scarce and competing health needs high. Although a topic of ongoing controversy, distress may also have a direct effect on treatment outcome as a negative correlation between pre-procedure distress and conception rates has been observed by some authors (Klonoff-Cohen *et al.*, 2001; Smeenk *et al.*, 2001; Boivin and Schmidt, 2005; Cousineau and Domar, 2007). Female distress appears particularly detrimental in this regard, but elevated stress levels among male partners also seem to contribute to treatment failure (Boivin and Schmidt, 2005). The underlying mechanisms are complex and not fully elucidated, but they probably involve an impact of stress response mediators on the hypothalamic–pituitary–gonadal axis (Campagne, 2006). Although the question of whether interventions aimed at reducing distress improve treatment is similarly inconclusive, it appears safe to conclude that psychosocial distress, where present, is a relevant variable in the management of infertility that requires attention.

Increased levels of distress may also affect health-related quality of life. The latter is a multi-dimensional concept comprising physical,

psychological and social aspects of a specific disease (Colwell et al., 1998; Schanz et al., 2005). In the index study a single instrument was used to evaluate a single domain. Although our results cannot be extrapolated to the wider concept of health-related quality of life, they do show an impact of infertility in the psychological domain. To date there are only few studies which have evaluated health-related quality of life in infertile people. Most of these have been conducted in industrialized countries, and one study from Brazil did not include men (Chachamovich et al., 2007; Montazeri, 2007). Of interest is a study conducted in Iran, which evaluated infertile couples undergoing treatment (Rashidi et al., 2008). According to results, men had a better health-related quality of life when compared with their female partners, but the lack of a control group did not allow for a comparison between infertile and non-infertile men. In the absence of data from South Africa or any other African country, we are planning to assess how infertility affects health-related quality of life through future studies. Central to this research will be the utilization of appropriate instruments which are sensitive to the infertility experience, while allowing comparison with other diseases and with infertile men and women living in other regions. Although the development of such instruments is in progress, they still require exploration and validation in larger and different settings (Schanz et al., 2005; Chachamovich et al., 2007; Boivin et al., 2009).

The results of this study must be interpreted in the context of the research design and setting, and sources of sample bias need to be considered. Our findings apply to a group of urban men who presented to an infertility clinic at a tertiary institution and cannot be extrapolated to all men suffering from couple infertility in South Africa. Men who do not seek medical care or who had unsuccessful treatment, and men who live in rural or different cultural settings may experience different levels of distress when compared with our study group. In addition, several other variables may influence the acute psychological symptom status among male partners of infertile couples. Studies conducted in developed countries have reported that increasing age and longer duration of infertility may be associated with a reduction in stress levels, reflecting, presumably, the ability of men and women to adjust to the experience of childlessness (Hirsch and Hirsch, 1995; Chachamovich et al., 2007). Distress levels may also be influenced by the various stages of infertility management. In a longitudinal study conducted in Canada, infertile couples showed significantly higher levels of distress at the time of the initial medical consultation when compared with subsequent clinic visits (Daniluk, 1988). Our study participants were therefore possibly interviewed at a time of heightened distress. Other variables may include the gender-specific cause of infertility, whether infertility is of primary or secondary nature, social and cultural factors, pre-existing mental ill-health and underlying personality traits, social support, as well as coping skills (Nachtigall et al., 1992; Cousineau and Domar, 2007; Lechner et al., 2007; Peronace et al., 2007, Slade et al., 2007). In this first study on infertility-related distress among men living in urban South Africa we did not investigate or control for these variables, and this should be considered in future projects.

It must also be noted that the SCL-90-R has not been formally validated in South Africa. Although this is a possible shortcoming of our study, a lack of local validation applies to many other standardized instruments. Furthermore, the SCL-90-R has been successfully applied as a research instrument to a wide range of communities all over the world (Derogatis, 1994). The inclusion of a local control group, and the fact that the T scores of the controls were close to the SCL-90-R reference group, provides additional confidence in the validity of our findings. Differences existed, however, between our study and control group, and these must be considered in the interpretation of our findings. Although the two groups were comparable with regard to home language, religious denomination, and the fact that informants were drawn from convenience samples of men presenting to public health care facilities, they differed in terms of marital status, age and education. The observed differences in T scores persisted, however, after controlling for these variables. This would suggest that the increased levels of distress in the study group can be attributed to infertility and not to sample bias.

Publications from African countries have reported that men are often excluded from infertility services, based on their own reluctance as well as on shortcomings in the health service (Anate and Akeredolu, 1994; Sundby et al., 1998). Even when present, men may be marginalized in the treatment process (Carmeli and Birenbaum-Carmeli, 1994). Our results highlight the importance of integrating male partners into infertility management and of addressing their specific needs. Expected benefits may include improvement in personal well-being, a positive impact on the couple relationship, greater satisfaction and compliance with infertility treatment and, possibly, higher conception rates. This patient-centred care requires an understanding of the male perspective of infertility. Our study makes an original contribution in this regard.

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