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Original Article

Development and Psychometric Properties of Prenatal Obsession Compulsion Scale (POCS)

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ABSTRACT

Objective: To develop an indigenous scale in Urdu language and determine psychometric properties to measure prenatal obsessive compulsive symptoms in pregnant women.
Study Design: Cross sectional analytical study.
Place and Duration of Study: Department of Psychology, University of Gujrat, Pakistan, from Oct 2018 to Sep 2019.
Methodology: Diagnostic criteria of Obsessive Compulsive Disorder present in Diagnostic and Statistical Manual of Mental Disorders-5 and Cognitive Behavior Model of Obsessive Compulsive Disorder were followed to develop the scale. An initial item pool comprising 119 items was generated with the help of extensive literature review, Diagnostic and Statistical Manual-5 and focused group interviews. Expert evaluation limited the item pool to 100 questions. Tryout of scale retained 100 items. Items were re-sequenced and rephrased for final administration. Moreover, data were collected by using self-reported questionnaires from 300 pregnant women, selected by using purposive sampling technique from obstetric and psychiatric wards of different private and government hospitals of district Gujrat. Reliability analysis, exploratory factor analysis and confirmatory factor analysis were implied for data scrutiny.
Results: After final administration of 100 items, 69 items were retained after applying Exploratory Factor Analysis under three sub factors; Obsessions, Compulsions and Impairment of Functioning whereas model fit (p=0.000, CMIN/DF =1.62, CFI=0.934, RMSEA=0.046, SRMR=0.04, GFI=0.834 and TLI=0.93) of Confirmatory Factor Analysis confirmed 40 items for final scale.
Conclusion: Prenatal Obsession Compulsion Scale with 40 items and three subscales is a reliable measure to assess obsessive compulsive symptoms during prenatal period.

Keywords: Obsessive Compulsive Disorder, Pregnant Women, Scale Development.

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INTRODUCTION

Pregnancy is a stage of life that is traditionally affiliated with emotions for pregnant women and they are naturally conscious for the safety of their fetus and feel uniquely responsible for them. It is also a time of growing stress and conversion to a new role, all of which can enhance vulnerability to produce problems.[1] During the prenatal period several psychological and hormonal changes take place but usually physical changes are focused and psychiatric changes are ignored unless a mental disorder develops. Mental and physical health is influenced negatively if the pregnant woman is unable to accommodate these changes and become vulnerable to suffer mild-to-severe mental disturbances.[2] especially psychosis, depression and the widely understudied obsessive compulsive disorder (OCD).

Prenatal OCD is varied from OCD which is exhibited in other times or situations. Normal obsessional thoughts vary from clinical intrusive thoughts by virtue of time they take and disability they cause.[3] The term prenatal OCD was chosen on the basis of literature as several researchers have already used this term in their research to refer OCD at the prenatal stage. In Prenatal OCD, the compulsions and obsessional thoughts are related to the health of the fetus, environment and wellbeing. Intrusive thoughts may be related to fetus getting hurt, lost or polluted, germs or contamination regarding the fetus and accidental/intentional injury to the fetus; and compulsions may involve checking, avoidant behaviors like avoid bathing or hang out, extravagant cleaning/washing, seeking-reassurance and mental rituals. Most common intrusive thoughts observed during the prenatal period are: baby being taken away after birth, being afraid of having an unhealthy baby at birth, infant death and contamination. These signs of prenatal OCD develop intense distress and disability not only one's personal, occupational and social life, but may also impact the potential of the mother to take care of her baby, disturbing the mother-infant bonding process.[4] The prenatal period has also been related to

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aggravation of OCD signs; particularly in clients with prior history of OCD.[5]

Prenatal OCD is influencing up to 9% of pregnant women every year and onset of OCD signs related to pregnancy ranges from 2-4%. Almost half of all new mothers narrated intrusive, unwanted thoughts of hurting their infant.[6,7] and 81% of the pregnant women could be classified as having obsessive-compulsive disorder.[8] However, in Pakistan 31.5% women showed severe symptoms of obsessions and compulsions during the pregnancy.[9]

Currently only one scale has been developed in 2011 to assess pregnancy related OCD named as Prenatal Obsessive Compulsive Scale by Lord *et al.*,[4] Van Broekhoven, Hartman, Spek, Bergink, Van Son *et al.*, in 2016 developed the Pregnancy Obsession-Compulsion-Personality Disorder Symptom Checklist.[10] These scales were developed in English language which was not a suitable language for the desired population of current study as well as cultural biases could hamper investigation of OCD in Pakistan so it was needed to construct a scale in Urdu language. Hence, in present study, the first instrument in Pakistan will be constructed to measure obsessive compulsive symptoms during pregnancy and it would be a primary research that will be carried out in Pakistan to take into account the OCD during the prenatal period. The findings of the study will provide useful insights to increase the level of awareness among pregnant women and their family members and results will also be beneficial for the health department. Prenatal OCD badly affects the developing mother-infant bond so present study suggests that the criteria of psychiatric assessment should be added in antenatal care practice and assessment of OCD should be a part of screening procedure in obstetrical care.

METHODOLOGY

This was a cross sectional analytical study which was conducted after getting approval of a proposal from Advanced Studies and Research Board, no: PSY/UOG/21/2679 under Psychology department of University of Gujrat, Gujrat, Pakistan from February to September 2019. Study was permitted and approved by the ethical committee of the respective department. Data were collected from obstetrics and gynecology wards of the government and randomly selected private hospitals/clinics of district Gujrat. A demographic form and Prenatal Obsession Compulsion Scale (POCS) were administered on a sample of n=300 pregnant women that was selected by using purposive sampling technique.

Inclsuion Criteria: Pregnant women who visited hospital for their routine prenatal check up or psychiatric consultation for OCD were included in the study.

Exclusion Criteria: Patients who came for postnatal checkup or had any other psychological disturbance other than OCD/anxiety/depression were excluded from the study.

Consent to participate in the study was taken from respondents. It was assured to subjects that their whole information will be kept confidential and will only be used by the researcher for research purposes and they have the right to withdraw from study anytime. The purpose, whole procedure and significance of current research were explained to participants.

Current study was based on two phases of the scale development process. In Phase-I Prenatal Obsession Compulsion Scale (POCS) was constructed by using a deductive approach. In current study, the concept of prenatal OCD was derived from the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5).[11] model of psychopathology and Salkovskis's (1985) cognitive theory of OCD which suggests that intrusive thoughts, ones practiced in the normal population, convert into clinical obsessions when the person translates the intrusions as inculpating eminent personal responsibility.[12]

Phase-I was based upon four steps: At 1st step item pool was generated in Urdu language through three main sources: a) Literature review, b) In-depth semi structured interviews with two psychiatrists and five clinical psychologists c) In-depth semi structured interviews from three OCD diagnosed pregnant women. Total 119 items were generated by keeping in mind the dimensions of OCD presented in DSM-5. At 2nd step content validity was done by nine experts including six psychiatrists and three clinical psychologists. After experts' meetings, a draft of 100 items was finalized to proceed on. At 3rd step, five point likert scale, ranging from 0 to 4 was selected to try out 100 items of the newly developed instrument for the psychometric cleansing of questions and to do necessary modifications subsequently.

In pilot study, data were collected from 30 pregnant women. Reliability of scale was found to be α= 0.97. All items were considered to be clear and

understandable for respondents. After the try out, the final draft was consisted of 100 items with a changed likert scale. Likert scale was changed just for the convenience of respondents as the majority of respondents stated that they don't exactly know the time duration of disturbance in a day. The changed likert scale used the same ranges from 0 to 4 but the intensity was measured from 0= never to 4= very much instead of considering it in hours. These ranges served the same purpose, meaning they measure severity in total time duration of disturbance per day.

At 4th step the structure of the instrument was decided through factorial validity. For this purpose, EFA and CFA were applied.[13] Data Analysis to analyze the data reliability analysis, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were implied by using Statistical Package for Social Sciences (SPSS-21) and Analysis of a Moment Structures (AMOS-21) for windows. Reliability of POCS was found to be α= 0.97, KMO value was 0.95 and the value of CFI was 0.93 that was in the acceptable range with the *p*-value of ≤0.05. The results confirmed the model fit of the POCS.

RESULTS

After conducting a pilot study, 100 items were further administered on 300 pregnant women. Suitability of data for factor analysis was verified by analyzing the normality, adequacy of sample size and by checking if any outlier present in data. It was found that data had symmetrical distribution and no outlier was present in data as well as sample size was adequate and suitable for factor analysis. The skewness value was found to be 0.01 and the value of z-test was 0.07. KMO value was 0.95 with significant value of Bartlett's test of Sphericity (p<0.01) which showed that data is suitable for further exploratory factor analysis.

By applying EFA on 100 items, principal component analysis extracted three factors that collectively accounted for 51.2% of variance. Theoretical framework and scree plot of POCS both supported to extract three factors of scale. From 100 items, 69 were retained after EFA while deleting the irrelevant questions. Factor-I named as Obsessions detained 38 items, Factor II-Compulsions kept 25 items and Factor III-Impairment in Functioning reserved 7 items.

All items had high loading in their defined factor which revealed that all items of a factor were conceptually/theoretically relevant to each other.

Confirmatory Factor Analysis was performed on 69 items to confirm the factorial structure of the scale. The three factor model of POCS was evaluated and data were modeled by using continuous and maximum likelihood estimation. Finally, CFA extracted 3 factors having a total no. of 40 items in POCS with 22 items in Factor-Obsessions, 13 in Factor-Compulsions and 5 items left in Factor-Impairment in Functioning. The values of model fit indicated a perfect model fit for POCS.

Once EFA and CFA were completed; at phase-II psychometric properties of POCS were established. The assessment for reliability, validity and unidimensionality for the measurement model was needed before modeling the structural model. Unidimensionality was achieved through discarding the items that had low factor loading. The new model was run and the item deletion process was performed repeatedly until the fitness indices attained the required level and all items had positive factor loading.

There are two requirements of reliability in the measurement model: Average Variance Extracted (AVE) and Composite Reliability (CR). These both are always computed to guarantee the validity of the structural model.

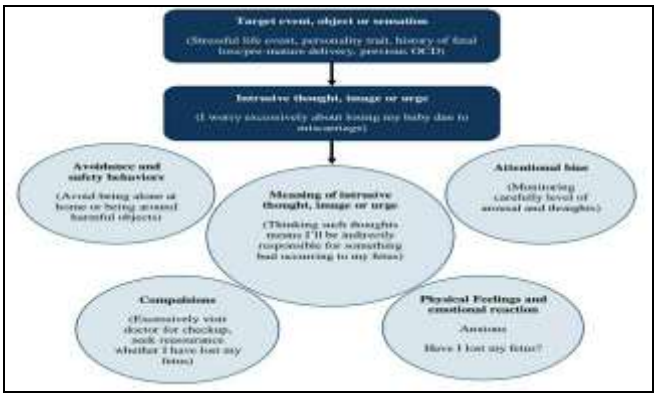

Figure-1: Prenatal Obsessive Compulsive Model for Pregnant Women

Table-I: Kaiser-Meyer-Olkin and Bartlett's Test for Sampling Adequacy of 69 items (n=300)

Scale	KMO	Chi-Square	Bartlett's Test	
			df	*p*-value
Prenatal Obsession Compulsion Scale	0.95	15213.004	2346	<.001

Composite reliability of three factors of POCS was above 0.7 which was good and acceptable and values indicated that these were highly reliable

Table-II: Exploratory Factor Analysis Item Loading of Prenatal Obsession Compulsion Scale on Three Factors Using Rotated Component Matrix (n=300)

Item No.	Obsessions	Item No.	Compulsions	Item No.	Impairment in Functioning
03	.672	88	.725	97	.872
25	.667	87	.721	98	.866
43	.665	85	.689	99	.861
17	.648	76	.685	96	.853
02	.646	93	.677	95	.847
14	.638	57	.671	94	.807
31	.635	69	.667	100	.797
42	.633	68	.666		
30	.622	64	.661		
44	.615	92	.656		
01	.613	63	.646		
04	.607	58	.641		
05	.595	77	.632		
15	.592	81	.628		
28	.591	82	.622		
13	.584	86	.616		
24	.584	61	.613		
29	.580	62	.590		
12	.578	60	.583		
20	.573	89	.578		
21	.572	71	.575		
10	.571	78	.532		
53	.571	90	.522		
11	.566	80	.521		
32	.565				
33	.562				
36	.559				
45	.553				
23	.549				
26	.545				
22	.539				
09	.536				
06	.533				
47	.526				
39	.520				
50	.515				
52	.510				
51	.505				

constructs. In terms of AVE, factors had acceptable levels of average variances. Cronbach's alpha reliability of total scale was 0.96 which was significantly high and above from acceptable reliability value 0.70. Validity was examined through convergent and construct validity. Convergent validity: The value of AVE of all factors was in acceptable range except obsessions which was near to acceptability range. Construct validity: Construct validity for model was obtained by fitting the model to the required level of fitness indices. Values showed that POCS was a valid and highly reliable instrument having a total of 40 items. The minimum score which can be obtained on POCS is '0' and the maximum score can be '160'. Total scores obtained on scale represent the severity of OCD during prenatal period. High score represents higher/extreme level of prenatal OCD.

Table-III: Model Fit Indices of Confirmatory Factor Analysis for Prenatal Obsession Compulsion Scale (n=300)

Indices	CMIN/DF	RMSEA	SRMR	GFI	CFI	TLI
Model	1.628	.046	.042	.834	.934	.930

CMIN/DF= Minimum Discrepancy per Degree of Freedom, RMSEA= Root Mean Squared Error Approximation, SRMR= Standardized Root Mean Square Residual, GFI= Goodness of Fit Index, CFI= Comparative Fit Index, TLI= Tucker Lewis index

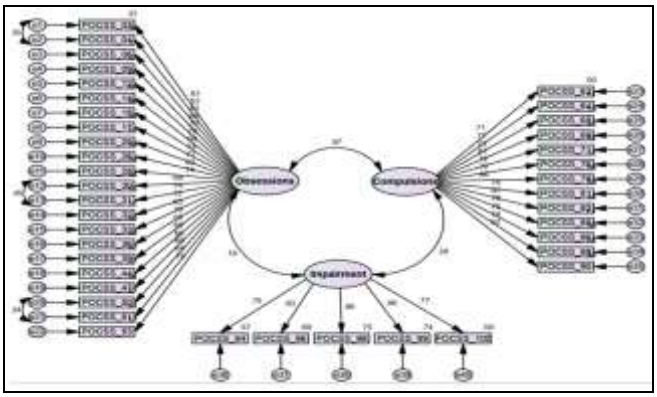

Figure-2: Factor Structure of the Prenatal Obsession Compulsion Scale Obtained from Confirmatory Factor Analysis

Table-IV: Alignment on Strategic Orientation; Composite Reliability (CR) Coefficients, Average Variance Extracted (AVE) and Cronbach's Alpha Reliability (α) Coefficients (n= 300)

Construct	Composite Reliability	Average Variance Extracted	Cronbach's Alpha Reliability (α)
Obsessions	0.92	0.36	0.94
Compulsions	0.90	0.43	0.92
Impairment in Functioning	0.92	0.72	0.90
Prenatal Obsession Compulsion Scale			0.96

DISCUSSION

The principal objective of present study was to construct and validate an indigenous Prenatal Obsession Compulsion Scale in native language Urdu. For this purpose, factor analysis was conducted after collecting data from 300 pregnant women by administering an item pool composed of 100 items. Present study reported 0.95 KMO value with significant value of Bartlett's test of Sphericity and 51.2% of explained variance. These values indicated that data were normal, multivariate and suitable for

further exploratory factor analysis and the sample was adequate.[14] Pett, Lackey, and Sullivan found that as a general rule variance should be at least 50%.[15] and confirmed that KMO value equals to 0.5 is acceptable and between 0.8-0.9 is considered excellent.[16]

EFA extracted three factors and 69-item POCS; having 38 items in factor Obsessions, 24 in factor Compulsions and 7 in factor Impairment in Functioning. All items on EFA had high loading in their defined factor which depicted that all items of a factor were theoretically relevant to each other. Literature explored that generally 0.32 is considered as a good rule of thumb for minimum loading of any item in a scale.[16]

CFA was applied on the remaining 69 items and it extracted a 40-item POCS. POCS retained good CFA model fit as: CMIN/DF= 1.62, CFI= 0.93, RMSEA= 0.04, SRMR= 0.04, GFI= 0.83 and TLI= 0.93. Marsh and Hocevar demonstrated that for acceptable model fit, the minimum discrepancy per degree of freedom should be <3.0 with *p*-value >0.05.[17] Bentler supported the above results by stating that good model fit is supposed with a CFI >0.90.[18] combined with RMSEA ≤0.05 as closer the value of RMSEA is to zero, the better the fit indices.[19] SRMR ≤0.08.[20] GFI >0.90.[21] and TLI >0.90.[22] Factor loadings greater than 0.50 reflect that items are good indicators of associated latent factor.[23]

POCS also retained good psychometric properties. The reliability value of the final 40 items was α= 0.96 which demonstrated a desirable value of internal consistency of the scale. Previous study is in line to support the reliability findings of the current study that argued: an alpha value ranging from 0.93-0.94 is regarded as excellent, and it is considered statistically good if it ranges from 0.91-0.93.[24] The Composite Reliability of three factors of POCS was above 0.7 that depicts that these were highly reliable constructs as confirmed by previous findings23; and in terms of AVE, factors had acceptable level (AVE ≥0.50 but 0.40 can also be accepted) of average variance except obsessions.[25]

Final scale consists of 3 factors having a total no. of 40 items. The values of the newly developed scale of POCS were highly in acceptable ranges as these are according to the statistically adequate range.

CONCLUSION

An indigenous Prenatal Obsession Compulsion Scale (POCS) consists of 40 items and three subscales, has been developed in Urdu language by following standardized steps of scale development. Scale has good psychometric properties and can be used in further research.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

TK & SS: Data acquisition, data analysis, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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