A Study of Factor Structure of the Mood Disorder Questionnaire in a Sample of Iranian Pregnant Women

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Objective: The Mood Disorder Questionnaire (MDQ) has been developed as a self-reporting, brief, and easy-to-use screening instrument to improve identification of bipolar mood disorders. The goals of the present study were to examine the prevalence of this disorder and interrelationship of its symptoms by factor analysis of MDQ in a group of pregnant women in Iran.

Methods: One thousand and eight hundred and ninety eight pregnant women in their third trimester were recruited to take part in a cross-sectional study. Trained local health workers administered MDQ for them. A principal component factor analysis was used to determine factors for relevant items of MDQ questions.

Results: The mean age of the participants was 25.4 ± 5.1 years. About 3.9% of participants met the MDQ diagnostic criteria for bipolar mood disorder, and 19.6% scored positively for at least one Mood Disorder Questionnaire item and also had moderate to severe psychosocial impairment (second sample). The first factor analysis on the whole sample revealed elevated mood, increased self-confidence and energy, increased social activity and disinhibited sexual behavior as significant. Irritability, talkativeness, insomnia, racing thoughts, distractibility, risky behavior and overspending were determined as important by the second factor analysis.

Conclusion: Self-reporting of hypomanic symptoms by Iranian pregnant women revealed a relatively high prevalence rate of Bipolar Spectrum Disorders. Study analysis also showed there were two independent factors: an energized-activity factor and an elevated mood-thought racing factor.

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Introduction

Bipolar disorder has been diagnosed all over the world. The published prevalence studies show considerable variations from 0.45 to 5.5% for the lifetime prevalence and between 0.37 and 1.3% for 12 month prevalence depending on the study design, instruments and diagnostic criteria applied (1,2).

Some contemporary research, by considering the concept of bipolar spectrum disorder, have proposed that bipolar disorders might be much more common than is currently known (1,2). The concept of soft bipolarity or bipolar spectrum disorders(BSDs) has been created by broadening the definition of bipolar disorders to include those sub threshold conditions that have not met strict bipolar disorders' criteria in DSM-IV (3-5). A recently published US national survey with a sample of 9282 English-speaking adults, reported lifetime prevalence estimates of bipolar spectrum disorder of 1.0% for Bipolar I Disorders, 1.1% for Bipolar II Disorders, and 2.4% for sub threshold Bipolar Disorders (their 12-month prevalence was 0.6%, 0.8% and 1.4% respectively) (6).

In another survey, over 85,000 subjects, representative for the adult USA population completed the Mood Disorders Questionnaire (MDQ). The results showed that slightly less than 4% of American adults might suffer from bipolar disorders (7).

Beyond the commonality of bipolarity, the proper diagnosis of BSDs is important because of the consequences associated with missed

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diagnosis and misdiagnosis (8-15) since the burden associated with this disorder is significant. Thus, there is a need to improve the diagnosis and recognition of BSD, especially in primary care settings in order to facilitate early treatment.

The MDQ has been developed as a self-reporting, brief, and easy-to-use screening instrument in psychiatric settings to improve identification of BSDs and has a sensitivity of 0.73 and a specificity of 0.90 (16). In a general population study, its sensitivity (0.28) was much lower, but the reported specificity (0.97) remained remarkably high (17). It has been translated and validated in French (18), Turkish (19), Spanish (20), and Italian (21) languages.

In recent years, two studies reported factor structure of soft bipolar symptoms in depressed and community samples using MDQ (22,23). These works resulted in recognition of a set of prominent symptom dimensions of hypomania which could be used to create worthy homogeneous subgroups for epidemiologic, genetic, and therapeutic studies.

The goals of the present study were to examine the prevalence of hypomania and interrelationship of its symptoms by factor analysis of MDQ in a group of pregnant women in Iran.

Materials and Methods

The study was ethically and scientifically discussed and approved by the Research department of Isfahan University of Medical Sciences and Health Services. The participants were given enough information about the study. Those, who gave informed written consent, participated in the study.

Participants and settings:

From December 2005 to March 2006, all pregnant women in their third trimester, who visited (for prenatal care) rural health centers in Isfahan province, were recruited to take part in a cross-sectional study. Local health workers, who provided comprehensive primary health care including prenatal care, were trained in administering Beck Depression Inventory (BDI) and MDQ.

Instruments:

BDI was used to rule out presence of current depression. Those service users, who scored higher than 21on BDI, were excluded from the study and referred to a psychiatrist for further evaluation and treatment.

The remainder of the sample were screened for bipolar disorder using MDQ (16). This is a self-reporting inventory with 13 yes/no items derived from both DSM-IV criteria and clinical experience. A positive screen requires that seven or more items to be present, that at least several of the items co-occurred, and that the symptoms caused at least moderate psychosocial impairment (16). The Persian translation of MDQ was used for the study. This translation had demonstrated a good reliability ($r = 0.79$, $p<0.01$), sensitivity (0.76 with 95% CI: 0.67-0.84) and specificity (0.67 with 95% CI: 0.54-0.79).

Statistical Analysis:

A principal component factor analysis was used to determine factors for relevant items of MDQ questions. The modified score of diagnostic criteria for bipolar spectrum disorder is at least one MDQ positive item from questions number 1 to 13 plus moderate to severe psychosocial impairment (the last question in MDQ).

Results

From total of 1898 participants, 1770 completed MDQ. Participant with incomplete MDQ were excluded from statistical analysis. The mean age of participants was 25.4 ±5.1. Sixty nine participants met the MDQ diagnostic criteria for bipolar spectrum disorder (3.9%).

Three hundred and thirty nine (19.6%) participants positively scored for at least one MDQ item and also had moderate to severe psychosocial impairment (second sample). The statistical reliability of scale was (Cronbach's alpha) 0.66 for the entire sample and 0.64 for the second sample. The overall measures of sampling adequacy (MSA) for all 13 questions for the entire sample and the second sample were respectively 0.79 and 0.63. These measures indicated that factor analysis was appropriate for the current data.

Table 1 shows the percentage of responses to the MDQ questions which varied from 11.3% ('much more social') to 62.4% ('more self-confident') in the second sample.

Factor analysis of the MDQ responses was performed on the entire sample and also on those who had at least one positive item plus moderate to severe psychosocial impairment as a result of their symptomatology.

Two factors were identified for the both samples (Table 2). Despite the large number of dropped out cases from the factor analysis, the results were similar after using commands of list-wise and pair-wise deletion. As a result, we can argue that the missing value did not affect the factor analysis.

Table 1. Responses (percentage) to the MDQ† items

MDQ questions	Yes (%)	‡ N=133 Yes (%)
Elevated mood	320 (17.3)	48 (36.1)
Irritability	497 (26.6)	71 (53.4)
Increased self-confidence	927 (51.2)	83 (62.4)
Talkativeness	394 (21.2)	47 (35.3)
Decreased need for sleep	342 (19.1)	31 (23.2)
Racing thoughts	574 (31.8)	75 (56.4)
Easy distractibility	780 (41.9)	81 (60.9)
Increased level of energy	598 (32.4)	61 (54.9)
Increased sociability	131 (7.0)	15 (11.3)
Hyperactivity	560 (30.1)	53 (39.8)
Hypersexuality	334 (18.0)	29 (21.8)
Unwise or risky behavior	209 (11.2)	44 (33.1)
Overspending	123 (6.8)	24 (18.0)

† MDQ: Mood Disorder Questionnaire

‡ MDQ positive items ≥1 & >1 concurrent MDQ positive item & moderate to severe psychosocial impairment

Table 2. Principal component factor analysis (varimax rotation) of the responses to the MDQ†

MDQ questions	N=1770		‡ N=133	
	Factor 1	Factor 2	Factor 1	Factor 2
Elevated mood	0.192			0.257
Irritablility		0.361		
Increased self-confidence	0.369			
Talkativeness		0.240		
Reduced need for sleep		0.121	0.293	
Racing thoughts		0.279		0.435
Easy distractibility		0.354	0.038	
Increased level of energy	0.356		0.338	
Increased sociability	0.169			0.280
Hyperactivity	0.244		0.309	
Hypersexuality	0.300			
Unwise or risky behaviour		0.274		0.263
Overspending		0.134		
Variance%	20.2	11.2	17.8	10.9
Eigenvalue	2.63	1.46	2.31	1.42
Kaiser-Meyer-Olkin measure of sampling adequacy	0.79		0.63	

†MDQ: Mood disorder questionnaire

‡ MDQ Positive items 1≥ & >1 concurrent MDQ positive item & moderate to severe psychosocial impairment

Based on the results of the factor analysis on the entire sample, the first principal component (factor 1) had a total standardized variance of 2.63, accounting for around 20% of the overall variance. The second principal component (factor 2) accounted for a further 11.2% of the overall variance with the two components accounting for 31.4% of the overall variance present. The first factor based on the entire sample had loadings on elevated mood, increased level of self-confident, energy and sociability, hyperactivity and sexually disinhibited behavior. The second factor revealed following symptoms as significant: irritability, talkativeness, reduced need for sleep, racing thoughts, distractibility, risky behavior and overspending (Table 2).

Factor analysis for those who had at least one positive item plus moderate to severe psychosocial impairment (n: 133) revealed two significant factors (Table 2). The first factor (17.8% of variance) showed a loading above 0.25 on reduced need for sleep; distractibility; increased level of energy and hyperactivity. The second factor (10.9% of variance) showed elevated mood, racing thought, increased sociability, overspending and unwise and risky behaviors as significant.

Discussion

The results of our study revealed that there was a 3.9% prevalence of BSDs in the sample population. This is in accord with the results of other studies (Hirschfeld et al. and Goldney et al.) (16,24). However, our result differed from the very high prevalence rate reported by Mangelli and their colleagues (23). This can be explained by different methods of selecting the sample population.

Factor analysis of MDQ symptoms in our study revealed two factors as significant: an energized-hyperactivity factor and an elevated mood- racing thought factor. In this regard it is similar to the work of Benazzi and Akiskal who found a similar dual factor structure of self-rated MDQ (22). On the other hand, these two factors were different from what is found by Mangelli et al. (23) who reported loadings on elevated mood, grandiosity, decreased need for sleep, and increased energy and hyperactivity for the first factor and irritability, racing thoughts, distractibility, and risky behavior for the second.

The strong point of the present study is that it has been carried out among pregnant women, who are potentially at risk of BSDs. We have also excluded those who had depressive symptoms and as such the result of our study is much more associated to hypomanic symptomatology.

Conclusion

Self-reporting of hypomanic symptoms by Iranian pregnant women revealed a relatively high prevalence rate of Bipolar Spectrum Disorders. Factor analysis of the MDQ items chosen by the service users also showed presence of two important and independent factors: an energized-activity factor and an elevated mood-thought racing factor.

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