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Evaluation and comparison of disability and functioning of low-risk pregnant women in 2nd and 3rd trimester using the world health organization disability assessment schedule 2.0

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ABSTRACT

Background: Pregnancy is a physiological phenomenon where there is progressive anatomical, physiological, and biochemical change not only confined to the genital organs but also to all the systems of the body. There is a lack of knowledge in the field of functioning and disability among women with low-risk pregnancy without severe complications, and the condition that can lead to limitation in activity and restriction of participation. Considering the lack of research and the fact that the physiological changes of pregnancy can impact negatively on women's functioning, the purpose of this study was to evaluate disability and functioning of low-risk pregnancy and its associated factors using a specified diagnosed tool developed by the World Health Organization (WHO). **Aims and Objectives:** The aim of the study was to evaluate disability and functioning of low risk pregnancy using the WHO disability assessment schedule 2.0 (WHODAS 2.0). **Materials and Methods:** This is an observational hospital-based prospective study, 140 women aged 18–35 year with low-risk pregnancy were interviewed first in 2nd trimester using WHODAS 2.0 questionnaire which was followed by 2nd interview in 3rd trimester with a minimum gap of 8 weeks and comparison was done between both trimester. **Results:** Higher level of disability observed in cognition in 2nd trimester (P = 0.009) while mobility and life activities domain were high in 3rd trimester (P = 0.01 and P = 0.027). Self-care domain had P = 0.008 which was statistically significant with increasing level of difficulty in self-care as pregnancy advances. Getting along (P = 0.005), participation (0.042) indicating greater difficulty as pregnancy progresses. **Conclusion:** The findings showed that even in a low risk pregnancy, functioning can be affected in different domains. The identification of impairments to functioning could enable improvement in care. Longitudinal studies involving the first trimester and postpartum are necessary to gain insight into women's disability and functioning during the pregnancy puerperal period.

Key words: Disability and functioning; Disability evaluation; International classification of functioning; Pregnant women; Low risk pregnancy; WHODAS 2.0

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INTRODUCTION

Pregnancy is a physiological phenomenon which involves multiple aspects such as the mental and physical state of woman.[1] The adaptive changes in body structure and state along with the new equilibrium established in composition of hormones, blood component and local milieu leads to changes in ability of women to perform day-to-day activities.

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Improving maternal health and reducing related mortality have been key concerns of the international community as evidenced by being part of the third Sustainable Development Goals.[2] The occurrence of severe maternal morbidity (SMM), defined as having a potentially life-threatening condition and/or maternal near miss, has been studied over the past decade: Impacts on maternal and child health are unquestionable[3-5] as are their effects on women's functionality (her ability to perform everyday tasks, including social and economic responsibilities).[6]

Non-life-threatening or non-SMM (non-SMM) is also a theme of concern and is currently defined as "any health condition attributed to and/or complicating pregnancy and childbirth that has a negative impact on the woman's well-being and/or functioning."[7]

There are many challenges in women's health and well-being during pregnancy and postpartum, even among those women with no medical complication, especially in developing countries which needs to be considered while providing care to them.

Functional status describes a person's ability to perform a task or activity in the environment in which they live and is the result of dynamic interaction between health conditions and contextual factors, integrating the different dimensions of health (individual, biological, and social).[8,9]

Any restriction of lack of ability to perform an activity in the manner or within a range considered normal for a human being is called disability.[10] Limitation of activity/mobility in pregnancy leads to disability which results into economic loss and stress.

Monitoring more than just the traditional indicators of health, and pregnancy requires an expanded approach. Information on disability and functioning is an important component of health assessment and has provided helpful evidence for measuring disease burden across different settings[11,12] through a tool developed by the World Health Organization (WHO) called WHO disability assessment schedule 2.0 (WHODAS 2.0).[13] It is a free-to-use tool.

The complete version has 36 questions (WHODAS 36), while a shorter 12-item version is also available (WHODAS-12). Each question has a score for grading none (1), mild (2), moderate (3), severe (4), and complete (5) in the past 30 days. There is a maximum score for each domain and a total score ranging from 1 to 100.

This tool seeks to measure functionality and considers six domains (cognition, mobility, self-care, getting along with people, life activities, and participation) as they apply to daily living activities in the past 30 days. Limited study has been done on women with low-risk pregnancy and its associated disability and functioning.

Aims and objectives

To evaluate disability and functioning of low risk pregnant women using WHODAS 2.0.

REVIEW OF LITERATURE

Even in a low-risk pregnancy functioning can be affected in different domain. The identification of impairment could improve in care. The need to quantify disability first appeared in 1962 with the publication of the health sickness rating scale.[14] This scale was replaced by the global assessment scale in 1976[15] which was further reviewed as the global assessment of functional scale included in DSM |||| and DSM |V.[16]

In response to the need to have a tool to evaluate functioning with a cross-cultural prospective and at the same time easy to apply, WHO developed the WHODAS and its next version with more domains, WHODAS 2.0.[17] It has high internal consistency; high test-retest reliability and good concurrent validity in patient classification when compared with other recognize disability scores.

Thirty-six item versions provide the most detail, allow to compete overall, and six domain-specific functioning scores. Twelve item versions are useful for a brief assessment of overall functioning in surveys.

There have been studies to gain insight into women's disability and functioning during the pregnancy-puerperal period.

Dantas et al.,[9] conducted an observational longitudinal study in Family Health unit in the city of Santa Cruz, Rio Grande do Norte, Brazil involving women who were in 2nd trimester of pregnancy where the pregnancy had been classified as low risk using WHODAS 2.0. Higher level of disability was observed in cognition in the 2nd trimester (P=0.021) while mobility and life activities domains had higher score in the 3rd trimester (P=0.007 and P=0.029). Ours is a similar study where cohort is low-risk pregnant women in 2nd trimester of pregnancy visiting ANC clinic of Umaid hospital.

Guida et al.,[18] Silveria et al.,[19,20] conducted retrospective study on postpartum women for measuring functioning and disability using WHODAS 36-item tool and 12-item tool. The mean general WHODAS score was high among women with SMM (19.04±16.18) than among women without SMM (15.77±14.66; P=0.015).

Silveira et al.,[6] and Cresswell et al.,[8] conducted cross-sectional study on antepartum and postpartum women on the distribution

of functioning status among pregnant and postpartum women and examines the relationship between functioning and health conditions. Women attending antenatal care had a lower level of functioning than those attending postpartum care.

MATERIALS AND METHODS

Study design

This study was a prospective observational cohort study.

Study location

This study was the Department of Obstetrics and Gynaecology, Dr. S. N. Medical College, Jodhpur.

Study duration

From approval of the topic by the IEC committee until the desired sample size is obtained (Estimated completion May 2024).

Inclusion criteria

Women aged 18–35 years with low-risk pregnancy in the late 2nd trimester (18–24) weeks attending ANC clinic at Umaid Hospital were included in the study.

Exclusion criteria

Any chronic illness or high-risk factor in present pregnancy that can affect maternal and fetal outcomes were excluded from the study.

Sample size

The study of Dantas et al.,[9] observed that the mean value of mobility and life activities in 2nd trimester was 27.4±21.2 and 31.9±32.9, respectively, and in 3rd trimester was 34±20.2 and 39.2±27.3, respectively. Taking these values as a reference, the minimum required sample size with 80% power of study and 5% level of significance is 140 patients.

Formula used is

For comparing mean of pre and post

$$N >= \frac{(\text{standard deviation})^2 * (Z\alpha + Z\beta)^2}{(\text{Mean difference})^2} + \frac{Z^{\alpha}}{2}$$

Where Zα is value of Z at two sides alpha error of 5% and Zβ is value of Z at power of 80% and mean difference in mean values of 2nd and 3rd trimesters.

Pooled standard deviation

$$\text{Sqrt}(((S1)^2 + (S2)^2)/2),$$

where S1 is the standard deviation of 2nd trimester.

Moreover, S_2 is the standard deviation of 3rd trimester.

Method of collection of data

1. Details of the study protocol were explained to the subjects
2. Informed consent obtained
3. A detailed evaluation of the enrolled women was done considering the clinical, socioeconomical, and educational data of the present pregnancy.

The first interview was done in the late second trimester (18–24) weeks using WHODAS 2.0 questionnaire which was followed by second interview in 3rd trimester with a minimum gap of 8 weeks.

Low-risk pregnancy is the one which causes no complications to the mother or fetus at present and no risk factors that can lead to maternal and fetal complications thereafter.

Cognition has six questions measuring understanding and communication, mobility is assessed by five questions, self-care has four questions, getting along is assessed by five questions. Life activity is measured in term of difficulty faced by individual in doing either work/school or household activity and has four questions related in it. Participation in society has eight questions.

Questions were put up before the patient by asking the patient to recall the disability and functioning in the past 30 days. There is a maximum score for each domain which is calculated by summing up the individual scores for each question which ranges from minimum 0 to maximum 4. The total score is calculated by item response theory ranging from 0 to 100.

Data analysis

To collect required information from eligible patients a pre-structured pre-tested pro forma with WHODAS 2 Questionnaire was used. For data analysis, Microsoft Excel and statistical software SPSS were used and data were analyzed with the help of frequencies, figures, proportions, measures of central tendency, and appropriate statistical test.

Statistical analysis

The data were analyzed using SPSS software and continuous variables reported using mean and standard deviation. Categorical variables were reported using number and percentage. Quantitative variables compared using paired t-test/Wilcoxon signed-rank test between 2nd and 3rd trimesters. Probability value <0.05 is considered as statistically significant.

RESULTS

The age distribution among the participants shows that 25.0% are under 25 years, 35.7% are between 25 and

Table 1: Sample characterization

Age	Frequency	Percent	Religion	Frequency	Percent
<25 years	35	25.0	Christian	4	2.86
25–30 years	50	35.7	Hindu	98	70.0
>30 years	55	39.3	Muslim	35	25.0
Parity			Sikh	3	2.14
0	30	21.4	Diet		
1	35	25.0	Non-vegetarian	41	29.3
2	42	30.0	Vegetarian	99	70.7
3	17	12.1	Exercise		
4 or more	16	11.4	No	101	72.1
Occupation			Yes	39	27.9
Homemaker	98	70	If yes, Type of Exercise		
Doctor	2	1.4	Walking	20	
Engineer	2	1.4	Yoga	15	
Clerk	3	2.1	Other	4	
Labor	5	3.6	Remunerative Employment		
Manager	5	3.6	No	92	65.7
Nurse	8	5.7	Yes	18	34.3
Tailor	4	2.8	Distribution of income		
Teacher	1	0.7	Less than minimum wages	101	72.1
Others	12	8.5	More than minimum wages	39	27.9
SES					
High	15	10.7			
Upper middle	31	22.1			
Lower middle	36	25.7			
Upper lower	33	23.6			
Low	25	17.9			
Education					
Educated	91	65.0			
Uneducated	49	35.0			

Table 2: Comparison between the mean scores of vitals in the 2nd and 3rd trimesters

Parameter	Mean	n	Standard deviation	P-value
Pulse rate				
2nd trimester	72.69	140	10.47	
3rd trimester	74.76	140	10.31	0.119
Respiratory rate				
2nd trimester	15.39	140	2.10	
3rd trimester	15.26	140	2.08	0.610
Systolic BP				
2nd trimester	120.00	140	10.68	
3rd trimester	119.18	140	10.68	0.504
Diastolic BP				
2nd trimester	79.56	140	10.63	
3rd trimester	79.98	140	10.25	0.753
Temperature				
2nd trimester	36.95	140	0.51	
3rd trimester	37.01	140	0.54	0.335

Table 3: Comparison between mean scores of WHODAS 2.0 in the 2nd and 3rd trimesters

Domain	Mean	n	Standard deviation	P-value
Total score				
2nd trimester	26.6	140	29.60	
3rd trimester	29.5	140	9.50	0.003
Cognition				
2nd trimester	28.99	140	17.67	
3rd trimester	24.04	140	14.37	0.009
Mobility				
2nd trimester	29.36	140	20.21	
3rd trimester	35.55	140	19.79	0.010
Self-care				
2nd trimester	29.76	140	16.80	
3rd trimester	40.75	140	23.27	0.006
Getting along				
2nd trimester	26.52	140	22.45	
3rd trimester	32.98	140	13.76	0.005
Life activities				
2nd trimester	36.84	140	26.48	
3rd trimester	39.95	140	22.78	0.278
Participation				
2nd trimester	31.85	140	18.72	
3rd trimester	37.00	140	22.36	0.042

WHODAS: World Health Organization disability assessment schedule 2.0

30 years, and the largest group, 39.3%, are over 30 years, indicates a diverse age range within the study population, with a slight skew toward older participants (Table 1).

Regarding disability and functioning, when comparing the total score and score per domain for WHODAS 2.0 in the two trimesters evaluated (Table 2), it was observed that the women in the second trimester obtained higher scores in cognition domain (P=0.009). Concerning the mobility (P=0.01), participation (0.042), getting along (P=0.005), self-care (P=0.006), and life activities domain (P=0.0278), the scores obtained were significantly higher in 3rd trimester indicating higher disability toward end of pregnancy (Table 3).

DISCUSSION

At a time when global efforts to improve maternal health have been prioritized, a baseline WHODAS score among antenatal women without any morbidity is helpful to understand the burden of pregnancy and morbidities overall. It could also help guide strategies to improve antenatal and postpartum care, as well as other studies focusing on specific postpartum conditions.

Our study focused on disability and functioning in low-risk singleton pregnancy during the second trimester and third trimester. The number of participants were 140 and were interviewed using WHODAS 2.0, 36-item version in last 30 days, participants were asked questions about all six domains and were compared with their scores in both trimesters along with total scores and there were significant changes in all of the domains. Regarding disability and functioning, when comparing the total score and score per domain for WHODAS 2.0 in the two trimesters evaluated, it was observed that the women in the second trimester obtained higher scores in the cognition domain, representing higher disability in that domain (P=0.009). Concerning the mobility (P=0.010) and life activities domains (P=0.027), the scores obtained were significantly higher in the third trimester, indicating that women displayed higher disability in these domains toward the end of pregnancy.

Cognition was more affected in the second trimester than third trimester and most of the women found it difficult to concentrate on a topic for longer period than usual however with progression in gestation the cognition in the majority of women was compatible to pre-pregnancy state. The evaluation of women in the second and third trimesters of pregnancy identified disability in both trimesters evaluated in different areas of WHODAS 2.0. The literature establishes a directly proportional relationship between pregnancy progression and disability, pointing to a more significant functioning decrease in the physical dimension during the third trimester, which is attributed to body changes inherent to the pregnancy period, such as weight gain, change in body weight distribution, and body shape changes. However, because functioning arises from the interaction between biological 42 and contextual factors, it must be considered that elements such as psychological stress, lack of social support, demands to maintain routine tasks, poor health, unfavorable socioeconomic situation, and exclusion from the work environment may cause disability throughout the gestational period, justifying the importance of conducting longitudinal studies in this field. Our study found a pregnancy causes a decrease in functioning and increased disability in mobility, self-care, getting along, life activity and participation as pregnancy advances. The domain that had a decrease in disability was cognition which could be due to better coping mechanisms. Our study found increasingly higher level of disability as pregnancy progressed pointing to changes in weight of women, posture, and gait along with lack of family and social support causing decreased functioning in performing their routine life activities. As a change in pregnancy occurs at fast pace along with coping way, we need a more modified scoring system and follow-up to provide appropriate counseling and intervention to overcome the maternal morbidity at the earliest. Findings of the present study show that women may suffer as a result of negative impacts in different domains during the gestational period, even in low-risk pregnancies. The number of studies that address the functioning of pregnant women using the International Classification of Functioning, Disability and Health as the reference, and approaching the concepts according to the universal language, is still limited. Thus, a strong point of the present study was the use of WHODAS 2.0 – an instrument validated and recommended by WHO to evaluate the functioning of individuals in different contexts. The longitudinal approach of the study indicated that the negative impacts on functioning were not restricted to the last trimester, enabling health professionals to review and adapt their intervention and care strategies accordingly. As workplaces become more women-centered, our approach to low-risk pregnancy as well as pregnancy-related complication need to be changed to provide early interventions, better working condition, health, and social services at the earliest and improve maternal health services. The world Health Organization has changed the axis of disability from what an individual cannot perform to a society or environment that does not provide adequate time, space, and services to people who live with disability irrespective of time frame 43. There are limited studies worldwide on disabilities in pregnancy with till fewer on women with low-risk pregnancy. More studies are required in the first trimester and puerperium to better understand the disability that pregnancy and puerperium have in the life of women.

Limitations of the study

Limited study has been done on women on low risk pregnancy and its associated disability and functioning.

CONCLUSION

At a time when global efforts to improve maternal health have been prioritized, a baseline WHODAS score among antenatal women without any morbidity is helpful to understand the burden of pregnancy and morbidities overall. It could also help guide strategies to improve antenatal and postpartum care, as well as other studies focusing on specific postpartum conditions.

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Our study found a pregnancy causes decrease in functioning and increased disability in mobility, self care, getting along, life activity and participation as pregnancy advances. The domain that had a decrease in disability was cognition which could be due to better coping mechanisms. Our study found increasingly higher level of disability as pregnancy progressed pointing to changes in weight of women, posture and gait along with lack of family and social support causing decreased functioning in performing their routine life activities. As change in pregnancy occurs at fast pace along with coping way we need a more modified scoring system and follow up to provide appropriate counselling and intervention to overcome the maternal morbidity at the earliest.

Findings of the present study show that women may suffer as a result of negative impacts in different domains during the gestational period, even in low-risk pregnancies. The number of studies that address the functioning of pregnant women using the ICF as the reference, and approaching the concepts according to the universal language, is still limited. Thus, a strong point of the present study was the use of WHODAS 2.0—an instrument validated and recommended by WHO to evaluate the functioning of individuals in different contexts.

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