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The Effect of Psychological Nursing Intervention on Pregnant Women Diagnosed with Fetal Malformations by Ultrasound

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Abstract: *Background and Objective*: Prenatal ultrasound has enabled early detection of fetal malformations, which can cause significant psychological distress for expectant mothers. This study aimed to investigate the effect of psychological nursing intervention on the psychological well-being and pregnancy outcomes of pregnant women diagnosed with fetal malformations by ultrasound. *Methods*: A total of 60 participants in the intervention group and 54 in the control group were included in the study. The intervention group received mental nursing intervention, including emotional support, professional language guidance, and team-based rotating inspections. The quality of life (QoL) was assessed using the World Health Organization Quality of Life Questionnaire (WHOQoL-Bref). *Results*: Results showed that the intervention group had significantly better emotional function and total QoL scores compared to the control group. *Concluson*: These findings suggest that targeted psychological support and intervention can effectively alleviate emotional distress and enhance overall well-being in pregnant women facing a diagnosis of fetal malformation. Further research should explore the long-term effects and cost-effectiveness of such interventions in larger and more diverse populations.

Keywords: Fetal Malformations, Infants, Mental Health, Nursing Intervention

1. Introduction

The prenatal period is a critical stage in human development, during which the fetus undergoes rapid growth and numerous physiological changes [1-3]. Thanks to advances in medical technology, prenatal ultrasound has become an integral part of prenatal care, facilitating the early detection of fetal malformations [4, 5]. These malformations, which can range from structural abnormalities to chromosomal anomalies, can have significant consequences for the health and well-being of the child and the family [6-9]. The diagnosis of a fetal malformation can induce considerable psychological distress in the expectant mother, potentially affecting both maternal and fetal health [10-12].

Psychological nursing intervention, which encompasses a variety of supportive services, has been recognized as an essential aspect of care for pregnant women experiencing stress, anxiety, or depression [13]. These services may include emotional support, education, counseling, and relaxation techniques to help women cope with the emotional challenges of pregnancy [14, 15]. Despite the growing body of literature on the effectiveness of psychological nursing intervention for various pregnancy-related complications, there is limited research on its potential benefits for pregnant women diagnosed with fetal malformations by ultrasound.

This study aims to investigate the effect of psychological nursing intervention on the psychological well-being and pregnancy outcomes of pregnant women diagnosed with fetal malformations by ultrasound. We hypothesize that psychological nursing intervention can significantly improve

the psychological well-being of these women by reducing their stress, anxiety, and depression levels, which, in turn, may contribute to better pregnancy outcomes. By examining the impact of psychological nursing intervention on this vulnerable population, our findings may offer valuable insights into the development of targeted interventions and support services for pregnant women confronted with a diagnosis of fetal malformation.

2. Methods

This study aimed to investigate the effects of mental nursing intervention on the quality of life (QoL) of pregnant women diagnosed with fetal malformations. The study included 264 pregnant women who were diagnosed with fetal malformations in the Fetal Medicine Department. We collected data through questionnaires and excluded 68 participants based on exclusion criteria. After randomization, we excluded 74 participants who changed hospitals, lacked survey results, or provided low-quality results. In the end, we included 60 participants in the intervention group and 54 participants in the control group.

2.1. Participants and Procedure

The study included pregnant women who participated in activities for pregnant women organized within the First Affiliated Hospital of Jinan University. The survey was anonymous and conducted only in places where consent was obtained. The respondents consisted only of volunteers. In each case, the survey supervisor presented the purpose and scope of the research to the respondents and instructed them on how to complete the questionnaires. The method "pen and paper" was used in the study, and the respondents were given unlimited time to fill in the questionnaires.

In the intervention group, we provided mental nursing intervention to the participants. We first classified and evaluated the mental health status of the participants and provided verbal comfort and encouragement based on their situation. We also provided them with professional style language usage methods for future advice. For participants with poor mental health, we provided team-based rotating inspections and continuously monitored their emotional state. If these participants were still in poor mental health after discharge, we conducted a 2-month follow-up to record their physical and mental health status and provide language guidance.

2.2. Measure

We used the abridged World Health Organization Quality of Life Questionnaire (WHOQoL-Bref), a Chinese version provided by Wołowicka and Jaracz [[16]], as the methodological basis for the assessment of QoL. The WHOQoL-Bref questionnaire assesses self-reported QoL and general health of respondents. The questionnaire consists of 26 questions, with the first two questions analyzed separately, concerning self-assessed overall quality of life and general health of the respondents. The remaining 24 questions assessed four domains of QoL: physical health (7 questions), psychological (6 questions), social relationships (3 questions), and environmental (8 questions). The respondents marked their answers using a five-level rating scale (from 1 to 5 points, with higher scores indicating better QoL). The QoL in the domains was expressed as mean values, calculated according to the key and guidelines provided by the authors [[16]].

2.3. Statistical Analysis

We performed statistical analysis using SPSS 22.0. The significance of the analyzed variables in pregnant women with fetal malformations was evaluated using the Mann-Whitney U-test. We also analyzed correlations between the variables using Spearman's rank correlation test, with correlation coefficients calculated for each pair of variables. The level of statistical significance was set at $p \leq 0.05$.

3. Results

Table 1 presents the characteristics of the patients who were diagnosed with fetal malformations by ultrasound. The characteristics of the patients in the intervention group and the control group were similar, with no significant differences. The mean age of the respondents was 33.4 ± 12.6 years. The most common types of malformations included face and limbs. Approximately 60% of study participants had completed 1-3 years or more of college, while 40% of participants were either high school graduates or had completed less than 12th grade. The mean pre-pregnancy Body Mass Index (BMI) was 33.9 ± 6.1. Approximately 40% of participants had a family income of more than $60,000 per year, while approximately 30% of participants had a family income of less than $20,000 per year.

Table 1. *Patient characteristics.*

	Control group (n = 54)	Intervention group (n = 60)	P value
Age (year) (mean±SD)	34.7±13.6	32.5±11.8	> 0.05
Type of malformation, n (%)			> 0.05
Face	23 (42.6%)	31 (51.7%)	
limbs	21 (38.9%)	22 (36.7%)	
other	10 (18.5%)	7 (11.7%)	
Gestational week (week) (mean±SD)	10.4±3.8	11.2±4.1	> 0.05
Education, n (%)			> 0.05
≤12th grade or high school graduate	21 (38.9%)	25 (41.7%)	
College 1-3 years or more	33 (61.1%)	35 (58.3%)	
Prepregnancy BMI (kg/m^2), mean±SD	34.8±6.4	33.6±5.8	> 0.05

	Control group (n = 54)	Intervention group (n = 60)	P value
Family income, n (%)			> 0.05
< $20,000	16 (29.6%)	17 (28.3%)	
$20,000 - $40,000	7 (13.0%)	9 (15.0%)	
$40,000 - $60,000	9 (16.7%)	13 (21.7%)	
> $60,000	22 (40.7%)	21 (35.0%)	

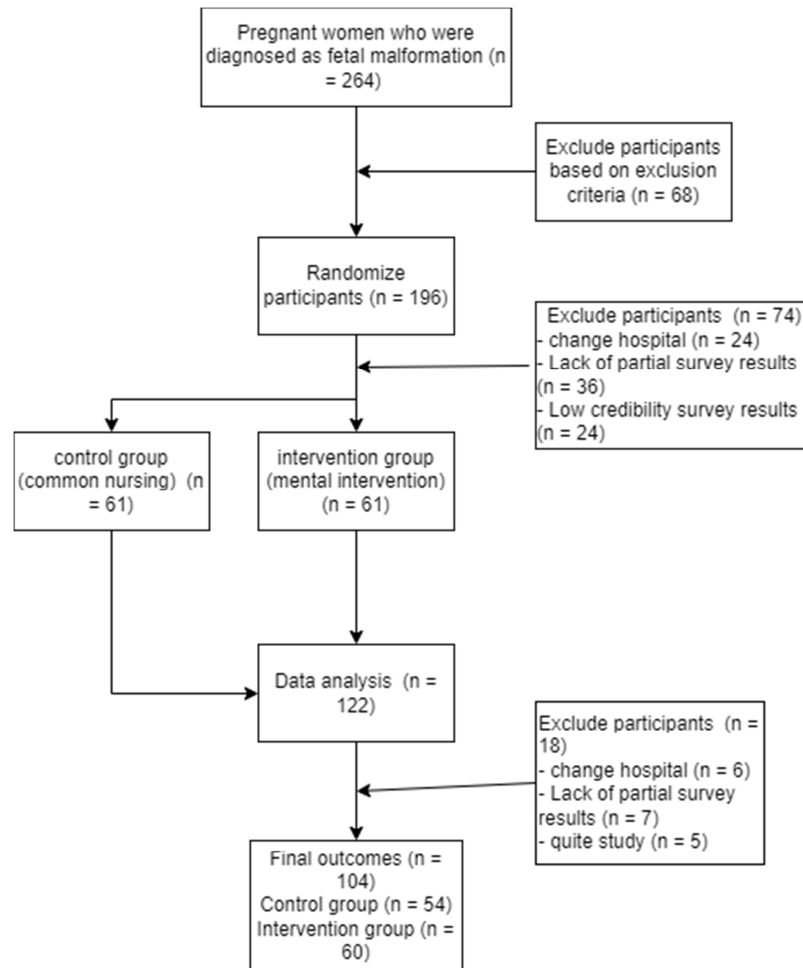SD: standard deviation; BMI: Body Mass Index

Figure 1. *Flow chart.*

Table 2 presents the comparison of quality-of-life assessment after carrying out nursing intervention. Some aspects of quality of life were significantly different between the two groups, including emotional function and total score. The intervention group had a higher emotional score in quality of life compared with the control group (15.39±5.11 vs. 17.34±5.75, p = 0.0431). Additionally, in the leukemia-specific module, the intervention group had a better performance than the control group (43.68±12.43 vs. 48.81±11.74, p = 0.003). Overall, the participants who received mental nursing intervention had a better quality of life than the participants who received common nursing intervention, as evidenced by the total score of quality of life.

Table 2. *Comparison of quality-of-life assessment after carrying out nursing intervention (mean±SD).*

Item	Physiological	Social/family	Emotional	Function	Leukemia specific module	Total score
Control group (n = 54)	13.18±5.78	22.85±6.17	15.39±5.11	11.85±6.14	43.68±12.43	106.15±24.84
Intervention group (n = 60)	14.84±6.13	22.44±6.54	17.34±5.75	14.66±6.51	48.81±11.74	118.69±23.81
P value	> 0.05	> 0.05	0.0431	> 0.05	0.003	0.0145

4. Discussion

Our study aimed to assess the effects of mental nursing intervention on the QoL of pregnant women diagnosed with fetal malformations. The results demonstrate that mental nursing intervention had a positive impact on the emotional well-being and overall QoL of these women.

The findings revealed that the intervention group, which received mental nursing intervention, showed significantly better emotional function and total QoL scores compared to the control group. This suggests that targeted psychological support and intervention can effectively alleviate emotional distress and enhance the overall well-being of pregnant women facing the diagnosis of fetal malformations. The provision of verbal comfort, encouragement, and professional language guidance helped the participants cope with their emotional challenges and maintain a positive outlook.

It is worth noting that the mental nursing intervention included team-based rotating inspections and continuous monitoring for participants with poor mental health. This proactive approach to monitoring and supporting their emotional state after discharge further contributed to their improved QoL. The 2-month follow-up allowed for the assessment of participants' physical and mental health status and provided necessary language guidance when needed. This comprehensive approach ensured ongoing support and care for the participants, promoting their long-term well-being.

The assessment of QoL was carried out using the WHOQoL-Bref. This validated questionnaire has been widely used to evaluate QoL across various populations and settings. The questionnaire captures multiple domains of QoL, including physical health, psychological well-being, social relationships, and environmental factors. The higher scores obtained by the intervention group in the emotional function and total QoL domains indicate that mental nursing intervention positively influenced these aspects of participants' lives.

The study's strengths lie in its rigorous methodology, including a large sample size and randomization of participants into the intervention and control groups. The inclusion of only volunteers ensured the active participation and commitment of the respondents, enhancing the validity of the findings. Additionally, the use of the Chinese version of the WHOQoL-Bref questionnaire provided a culturally appropriate and standardized measure for assessing QoL.

Despite the study's strengths, there are some limitations to consider. First, the study was conducted in a single hospital setting, which may limit the generalizability of the findings to other populations or healthcare settings. Future research should aim to replicate these findings in different contexts. Secondly, the follow-up period was limited to 2 months, which may not capture the long-term effects of mental nursing intervention on the QoL of pregnant women with fetal malformations. Longer-term follow-up assessments would provide valuable insights into the sustainability of the intervention's benefits.

5. Conclusion

In conclusion, our study demonstrates that mental nursing intervention can significantly improve the emotional well-being and overall QoL of pregnant women diagnosed with fetal malformations. The provision of targeted psychological support, continuous monitoring, and follow-up care proved to be effective in enhancing the participants' emotional resilience and coping strategies. These findings highlight the importance of integrating mental health support into the care of pregnant women facing challenging prenatal diagnoses, ultimately promoting their overall well-being. Future research should explore the long-term effects and cost-effectiveness of such interventions in larger and more diverse populations.

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