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Women's mental health during late pregnancy: A survey conducted in Shandong Province, China

Psychische Gesundheit von Frauen während der Spätschwangerschaft: Eine Umfrage durchgeführt in der Provinz Shandong, China

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ABSTRACT

Background The study aimed to investigate the general mental health status and its associated factors in women during late pregnancy. The objective was to provide a scientific basis for developing psychological interventions tailored to this specific population.

Methods The research was conducted from May 2021 to July 2022, involving the recruitment of 200 women attending maternal and child health clinics for their late-pregnancy check-ups. Data collection was carried out using a comprehensive approach, involving several validated tools. The participants completed a general demographic and sociological questionnaire along with four standardized psychological assessment scales: the 12-item General Health Questionnaire (GHQ-12), the Athens Insomnia Scale (AIS-8), the Generalized Anxiety Disorder 7 (GAD-7), and the 9-question Patient Health Questionnaire (PHQ-9). A total of 200 valid questionnaires were collected for analysis.

Results The study revealed that the overall prevalence of positive detection of general mental health problems in women during late pregnancy was 11 %. Significant differences were observed in the positive detection rate of general mental health status based on various factors such as the quality of relationships with husbands, pregnancy intentions, insomnia, anxiety, and depression ($p < 0.01$). Furthermore, participants with general mental health problems displayed notably higher scores on the AIS-8, PHQ-9, and GAD-7 scales compared to those without such problems ($p < 0.01$). Regression analysis indicated that pregnancy intention and PHQ-9 scores were influential

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factors affecting the general mental health of women during late pregnancy ($p < 0.05$).

Conclusion The study highlights high rates of general mental health problems during late pregnancy, with unplanned pregnancy and elevated depression scores as key risk factors. Regular mental health screening and targeted interventions are essential to support women during this critical period and enhance the well-being of both mothers and babies.

ZUSAMMENFASSUNG

Hintergrund Ziel der Studie war es, den allgemeinen psychischen Gesundheitszustand und die damit verbundenen Faktoren bei Frauen in der Spätschwangerschaft zu untersuchen. Ziel war es, eine wissenschaftliche Grundlage für die Entwicklung psychologischer Interventionen zu schaffen, die auf diese spezifische Bevölkerungsgruppe zugeschnitten sind.

Methoden Die Forschung wurde von Mai 2021 bis Juli 2022 durchgeführt und umfasste die Rekrutierung von 200 Frauen, die für ihre Spätschwangerschaftsuntersuchungen Kliniken für Mutter- und Kindergesundheit aufsuchten. Die Datenerhebung erfolgte mithilfe eines umfassenden Ansatzes, der mehrere validierte Tools umfasste. Die Teilnehmer füllten einen allgemeinen demografischen und soziologischen Fragebogen sowie vier standardisierte psychologische Bewertungsskalen aus: den 12-Punkte-Fragebogen zur allgemeinen Gesundheit (GHQ-12), die Athens Insomnia Scale (AIS-8) und die Generalized Anxiety Disorder 7 (GAD-7). und der 9-Fragen-Fragebogen zur Patientengesundheit (PHQ-9). Insgesamt wurden 200 gültige Fragebögen zur Analyse gesammelt.

Ergebnisse Die Studie ergab, dass die Gesamtprävalenz der positiven Erkennung allgemeiner psychischer Gesundheitsprobleme bei Frauen in der Spätschwangerschaft 11 % betrug. Signifikante Unterschiede wurden bei der positiven Erkennungsrate des allgemeinen psychischen Gesundheitszustands beobachtet, basierend auf verschiedenen Faktoren wie der Qualität der Beziehungen zu Ehemännern, Schwangerschaftsabsichten, Schlaflosigkeit, Angstzuständen und Depressionen ($p < 0{,}01$). Darüber hinaus wiesen Teilnehmer mit allgemeinen psychischen Problemen deutlich höhere Werte auf den Skalen AIS-8, PHQ-9 und GAD-7 auf als Teilnehmer ohne solche Probleme ($p < 0{,}01$). Die Regressionsanalyse zeigte, dass die Schwangerschaftsabsicht und die PHQ-9-Werte Einflussfaktoren auf die allgemeine psychische Gesundheit von Frauen in der Spätschwangerschaft waren ($p < 0{,}05$).

Schlussfolgerung Die Studie weist auf eine hohe Rate allgemeiner psychischer Probleme während der Spätschwangerschaft hin, wobei ungeplante Schwangerschaften und erhöhte Depressionswerte die wichtigsten Risikofaktoren sind. Regelmäßige Untersuchungen zur psychischen Gesundheit und gezielte Interventionen sind unerlässlich, um Frauen in dieser kritischen Zeit zu unterstützen und das Wohlbefinden von Müttern und Babys zu verbessern.

Introduction

The "Healthy China Action (2019–2030)" has emphasized the promotion of general mental health, making mental health care an integral part of women's health during pregnancy and childbirth [1]. Pregnancy represents a profound turning point in a woman's life, accompanied by significant cognitive, emotional, bodily, and social changes [2]. However, this transformative period is also characterized by an increased likelihood of mood disorders and sleep disturbances in pregnant women. Studies using clinical diagnostic techniques have indicated that approximately 8–12 % of pregnant women meet the criteria for mental disorders during pregnancy, most commonly presenting as anxiety or mood problems [3–5].

Mental health issues have been consistently reported as one of the most prevalent pregnancy-related difficulties, impacting up to 20 % of pregnant women during and after pregnancy [6]. Furthermore, certain mental health problems, such as anxiety attacks, low mood, and panic, have been identified as leading causes of maternal death in the United Kingdom, with cases being reported up to the first postpartum year [7]. A survey focusing on psychosocial risk factors during pregnancy revealed that 14 %–23 % of women experience depressive symptoms [8]. In China, the incidence of prenatal depression in pregnant women ranges from 15 % to 20 % [9]. Moreover, excessive anxieties, concerns, and fears regarding pregnancy, childbirth, the baby's health, and future parental responsibilities are collectively referred to as antenatal anxiety [10]. The pooled prevalence of prenatal anxiety symptoms across all trimesters is 34.4 % in low to middle-income countries and 19.4 % in high-income countries, as determined by a meta-analysis on the global prevalence of perinatal anxiety [11]. Prenatal emotional symptoms can have detrimental effects on both mothers and their unborn children, increasing the risk of early birth and pregnancy-related disorders [12–14].

Frequent insomnia is a common experience among pregnant women and is characterized by difficulties falling asleep and maintaining sleep, along with waking up too early with difficulty falling back asleep and experiencing frequent awakenings [15]. Poor sleep quality, involving the loss of deep sleep stages, particularly stages 3 and 4, is also prevalent during pregnancy [16]. Insomnia is the most prevalent sleep disorder affecting approximately 52 %–61 % of pregnant women [17]. Notably, sleep disorders are common during the perinatal period and are considered risk factors for perinatal depression [18].

Late pregnancy, typically defined as starting from 28 weeks after implantation, marks the final stage of pregnancy, where increased physical pain and fear of childbirth can significantly impact women's mental health [19, 20]. Pregnant women in their late pregnancy often experience higher levels of stress due to factors such as rapid fetal development, impending labor, concerns about childcare, and interpersonal connections [20]. Research has shown that approximately 12 % of women in late pregnancy experience depression, while 22 % experience high levels of anxiety [21]. Anxiety levels tend to increase as the delivery period approaches, and self-reported anxiety prevalence in the third trimester is approximately 24.6 % [11]. Late pregnancy is also associated with worse-

ned sleep quality [22], and approximately two-thirds of women experience insomnia during this period [23]. The prevalence of insomnia in pregnant women ranges from 12 % to 38 % in the first trimester, increasing to 60 % in the third trimester (after the 24th week of pregnancy) [24].

Given the current focus on specific emotional disorders like depression, anxiety, and sleep disturbances during late pregnancy, there is a need to pay more attention to women's general mental health during this critical period. This study aims to explore women's general mental health status in late pregnancy and analyze related factors, providing essential references for clinical interventions concerning mood and sleep disorders. By understanding the prevalence and risk factors associated with general mental health issues in late pregnancy, appropriate interventions can be developed to support the well-being of expectant mothers and contribute to the broader goals of promoting maternal and child health.

Materials and Methods

Participants

The study comprised a cohort of 200 pregnant women who were selected from the obstetrics clinic of a maternal and child health hospital in Shandong Province during the period from May 2021 to July 2022. To be eligible for inclusion in the study, participants were required to meet the following criteria: gestational age of 28 weeks or more, a clear understanding of the study's objectives, and a voluntary decision to participate. Additionally, participants were expected to possess normal language communication skills. Notably, individuals with severe mental illness were excluded from the study. Prior to the commencement of the research, the study protocol received approval from the Medical Ethics Committee of Tianjin Anding Hospital, and all participants provided written informed consent before their involvement in the study

Procedure

The data collection process was initiated at outpatient perinatal examination clinics, where pregnant women were informed about the research by the attending nurses, and informational leaflets detailing the study were distributed to them. Those who expressed their willingness to participate were requested to complete the questionnaire online by scanning QR (quick response) codes provided to them. A total of 247 pregnant women completed the questionnaire. However, after applying the inclusion criteria, 200 participants were deemed eligible for the study and included in the final analysis.

Measures

Socio-Demographic Questionnaire

The Socio-Demographic Questionnaire encompassed the collection of data on various key variables, including nationality, level of education, marital status, occupation, monthly household income, only-child status (indicating whether the participant was raised as an only child), history of mental illness, place of residence, status of the relationship with the husband, family members in the household, expectations concerning child-care after birth (identifying who would be responsible for childcare), number of fetuses (in cases of multiple pregnancies), history of threatened abortion, expected mode of delivery (e. g., vaginal birth or cesarean section), primipara status (indicating a first-time pregnancy), gravidity (representing the total number of pregnancies), abortion history, pregnancy intention, use of assisted reproductive technology, and other relevant variables.

General Health Questionnaire (GHQ-12)

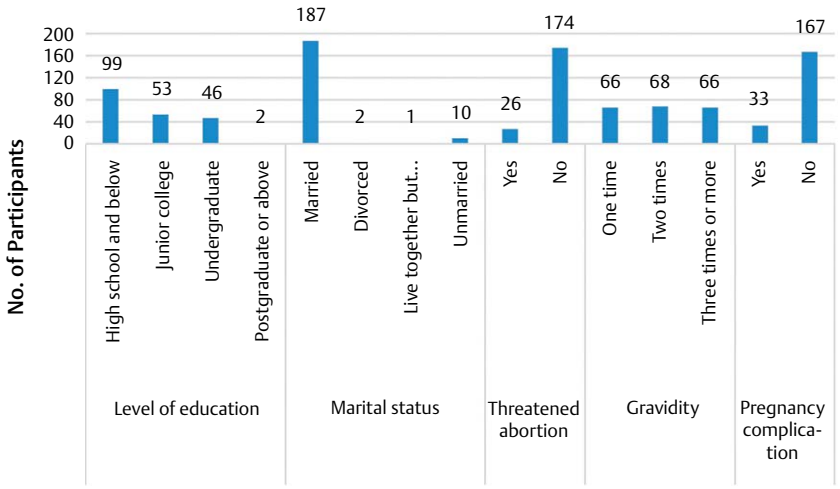
The General Health Questionnaire-12 (GHQ-12) was employed to evaluate the general mental health status of the participants. The GHQ-12 comprises 12 items, which are categorized into three dimensions: anxiety/depression, lack of social function, and loss of self-confidence. A 0-0-1-1 scoring method was applied (Coo et al., 2014), where a total score of ≥ 3 points was considered positive, indicating a likelihood of mental health problems. The GHQ-12 has demonstrated accurate clinical differentiation [25], making it a reliable tool for assessing mental health status. Additionally, the Chinese version of GHQ-12 has shown good reliability, validity, sensitivity, and specificity in previous studies [26, 27]. These properties underscore the suitability and efficacy of GHQ-12 in effectively capturing and identifying potential mental health concerns in the studied population.

Athens Insomnia Scale (AIS)

The Athens Insomnia Scale (AIS) is a self-rating scale comprising eight items designed to assess various aspects of insomnia. The first five items target difficulties related to falling asleep, frequency of nighttime awakenings, early morning awakening, sleep duration, and overall sleep quality. The remaining three items focus on well-being, overall functioning, and daytime sleepiness. Each item is rated on a scale ranging from 0 to 3 points, where 0 indicates no problem and 3 denotes a very serious problem. For the scoring, a total score of ≥ 6 points is considered a positive indication of insomnia. The Chinese version of the AIS questionnaire has demonstrated good performance characteristics, with a sensitivity of 96 % and specificity of 76 % as reported in previous research [28]. This highlights the effectiveness of the AIS in accurately identifying individuals with insomnia symptoms and contributes to its utility as a reliable tool for insomnia assessment in the studied population.

7-Item Generalized Anxiety Disorder (GAD-7)

The Generalized Anxiety Disorder 7 (GAD-7) is a validated self-report scale used to assess the frequency of seven distinct anxiety symptoms experienced by patients over the preceding two weeks. Each symptom is rated on a scale from 0 to 3 points, reflecting the severity of the symptom experienced. Total scores on the GAD-7 can be used to categorize anxiety levels, with scores of 5, 10, and 15 representing critical points for mild, moderate, and severe anxiety, respectively. The GAD-7 has been subject to various studies, demonstrating its high sensitivity of 89 % and specificity of 82 % [29]. These findings underscore the reliability and accuracy of the GAD-7 in effectively assessing anxiety levels in the studied population, making it a valuable tool for identifying individuals with anxiety symptoms and facilitating appropriate clinical interventions.



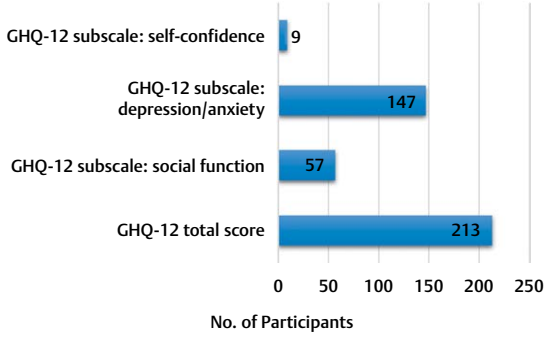
▶ **Fig. 1** General characteristics of women in late pregnancy.

9-Item Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire-9 (PHQ-9) is a validated self-assessment questionnaire comprising nine items used to evaluate the frequency of depressive symptoms experienced by individuals over the preceding two weeks. These symptoms encompass disturbed appetite, anhedonia (loss of interest or pleasure), low mood, inattention, fatigue, feelings of worthlessness or inappropriate guilt, insomnia or drowsiness, mental agitation or sluggishness, and thoughts of suicide. The scoring system for the PHQ-9 involves summing up the individual item scores, with a total score of 5 or higher indicating the presence of mild depressive symptoms. Extensive research on the PHQ-9 has demonstrated its high sensitivity of 94.7 % and specificity of 88.9 % [15], attesting to its reliability and accuracy in effectively detecting and assessing depressive symptoms in the studied population. As a valuable tool, the PHQ-9 aids in identifying individuals who may require appropriate clinical interventions for depressive symptomatology.

Statistical analysis

Data collation and statistical analyses were conducted using SPSS version 26.0 software. Enumeration data were presented as direct counts and percentages, while single-factor analysis was performed using the $\chi 2$ (chi-square) test to explore potential associations between variables. The significance of the results from both the single-factor $\chi 2$ test and t-tests was assessed, and variables showing statistical significance were subsequently included in a multivariate logistic regression analysis. A two-sided test was employed for all statistical analyses, and a p-value of less than 0.05 was considered as statistically significant, denoting meaningful associations between variables. This rigorous statistical approach ensured the identification of significant factors influencing the outcome of interest and contributed to the robustness of the study's findings.



▶ **Fig. 2** GHQ-12 sub-scales and total score.

Results

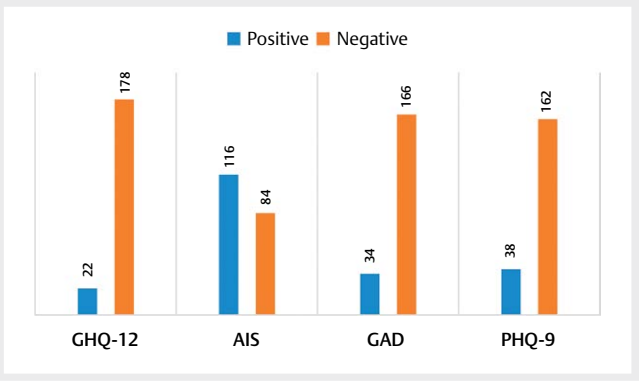
General and psychological characteristics

This study included a total of 200 women in late pregnancy, their ages ranging from 16 to 44 (29.85 ± 5.199), the descriptive statistics shown in ▶ **Fig. 1**. The GHQ-12 mean score was 1.07 ± 1.569. With 22 participants testing positive for mental health problems, the detection rate was 11 %. The sub-scales (correspond to three dimensions: anxiety/depression, lack of social function, and loss of self-confidence) of GHQ-12 were counted respectively, as shown in ▶ **Fig. 2**.

The AIS mean score was 4.71 ± 3.508; 116 participants having sleep disorders, the detection rate was 58 %. The GAD-7 mean score was 2.28 ± 2.846; 34 participants having anxiety symptoms, the detection rate was 17 %. The PHQ-9 mean score was 2.43 ± 3.108; 38 participants having depressive symptoms, the detection rate was 19 %, as shown in ▶ **Fig. 3**.

Univariate analysis of general mental health

There were significant differences in detection rates for participants' general mental health status according to relationships with husbands, pregnancy intentions, and experiences of insomnia, anxiety, and depression ($p < 0.01$), as shown in ▶ **Fig. 4**. The detection rates differed by education (lower mental health status corresponding to lower education attainment). They also differed by marital status (divorce showed stronger association with low mental health status than did "other" marital status). Only children showed lower mental health status, and having a marital relationship that was "not bad" was associated with lower mental health status than having a good relationship. Having threatened abortion was associated with lower mental health status than having never threatened abortion; the primiparas showed lower mental health status, and women experiencing their first pregnancies showed lower mental health status. Having no abortion history was associated with lower mental health status, as was unplanned pregnancy. Having no pregnancy complications was associated with lower mental health status, and so was blood type A. The scores of AIS-8, PHQ-9, and GAD-7 in late-pregnant women with general mental health problems were higher than those having no general mental health problems ($p < 0.01$), as shown in ▶ **Table 1**.



▶ **Fig. 3** Mental health status in late pregnant women.

Multivariate logistic regression analysis

The regression analysis was carried out using binary logistic regression method. The regression equation was modeled according to husband's emotional status, pregnancy intention, AIS-8, PHQ-9, and GAD-7 (all taken as independent variables); general mental health problems were dependent variables. The results showed that pregnancy intention and PHQ-9 score were influential factors of general mental health status in women during late pregnancy ($p < 0.05$), as shown in ▶ **Table 2**. The positive rate of pregnancy intention in different scales has shown in ▶ **Fig. 5**.

Discussion

Unplanned pregnancy means that the mother did not want to get pregnant or the timing of pregnancy did not match her intention [30]. Due to inadequate pre-pregnancy preparation, psychological changes in women experiencing unplanned pregnancies may be different from those during planned pregnancies [31]. In the current study, 35.5 % of the women reported the unplanned pregnancy, these numbers are significantly higher than the number of unintended pregnancies found in studies from other countries, such as in the Netherlands (5.8 % unplanned) [32] and the UK (16.2 % unplanned) [33], but lower than another study in the USA (45 % unplanned) [34]. This study found that the scores of general mental health status in women with unplanned pregnancies were lower than those of women with planned pregnancies. In this study, women with unplanned pregnancies are 1.5 times more likely to experience depression and 2 times more likely to experience anxiety. Although an unexpected pregnancy and prevalent mental problems were not linked in a cohort study of 461 pregnant women in Acre, Brazil [35]. According to Christensen et al. [36], there is no link between unplanned pregnancies and high levels of depressive symptoms during pregnancy. But this study's results concerning

▶ **Fig. 4** Influential factors on women's general mental health.

▶ **Table 1** Univariate analysis of factors affecting women's general mental health status in late pregnancy.

		General mental health status			
		Positive	Negative	Thex²/tvalue	P-value
		(n = 22)	(n = 178)		
Degree of education				0.594	0.898
	High school and below	10(10 %)	89(90 %)		
	Junior college	7(13.2 %)	46(86.8 %)		
	Undergraduate course	5(10.9 %)	41(89.1 %)		
	Master's degree or above	0(0 %)	2(100 %)		
Marital status				4.193	0.241
	Unmarried	2(18.2 %)	9(81.8 %)		
	Married	19(10.2 %)	168(89.8 %)		
	Divorced	1(50 %)	1(50 %)		
	Live together but unmarried	0(0 %)	1(100 %)		
Only child				1.212	0.271
	Yes	2(22.2 %)	7(77.8 %)		
	No	20(10.5 %)	171(89.5 %)		
Relationship with husband				11.954	0.001*
	Good	15(8.4 %)	164(91.6 %)		
	Same as	7(33.3 %)	14(66.7 %)		
Threatened abortion				2.068	0.150
	Yes	5(19.2 %)	21(80.8 %)		
	No	17(9.8 %)	157(90.2 %)		
Primiparity				1.116	0.291
	Yes	12 (13.6 %)	76(86.4 %)		
	No	10(9 %)	102(91 %)		
Gravidity				0.371	0.831
	One time	8(14.3 %)	58(85.7 %)		
	Two times	8(11.8 %)	60(88.2 %)		
	Three times or more	6(9.1 %)	60(90.9 %)		
History of abortion				0.004	0.952
	Yes	9(10.8 %)	74(89.2 %)		
	No	13(11.1 %)	104(88.9 %)		
Pregnancy intention				8.546	0.003*
	Planned pregnancy	8(6.2 %)	121(93.8 %)		
	Unplanned pregnancy	14(19.7 %)	57(80.3 %)		
Complication of pregnancy				0.147	0.929
	Yes	3(9.1 %)	30(90.9 %)		
	No	19(11.4 %)	148(88.6 %)		
Blood type				3.352	0.341
	A	10(17.2 %)	48(82.8 %)		
	B	5(8.9 %)	51(91.1 %)		
	AB	3(9.4 %)	29(90.6 %)		
	O	4(7.4 %)	50(92.6 %)		
AIS (sub, x ± s)		9.23 ± 3.766	4.15 ± 3.050	7.175	0.000 *
GAD-7 (sub, x ± s)		6.05 ± 3.922	1.81 ± 2.301	7.430	0.000 *
PHQ 9 (sub-point, x ± s)		6.55 ± 4.688	1.92 ± 2.426	7.435	0.000 *
AIS-8				10.990	0.001 *

▶ **Table 1** Continued.

		General mental health status			
		Positive	**Negative**	**Thex²/tvalue**	**P-value**
		(n = 22)	**(n = 178)**		
	Positive	20	96		
	Negative	2	82		
GAD-7				31.037	0.000 *
	Positive	13	21		
	Negative	9	157		
PHQ-9				32.002	0.000 *
	Positive	14	24		
	Negative	8	154		

* $p < 0.01$

the emotional impact of pregnancy intention on women's late stages of pregnancy are consistent with the results of numerous earlier studies focused on pregnant women. One such study suggested that women with unplanned pregnancies are 2.5 times more likely to experience depression [37] and anxiety [38]. Other studies have shown that women with unplanned pregnancies are nearly 3.5 times more likely to have depression and nearly 2.5 times more likely to have anxiety disorders [39]. Another study showed that 40 %–45 % of women with unplanned pregnancies experienced anxiety and 20 % experienced depression [40]. A study based in obstetric clinics showed a higher incidence of depression in pregnant women with unplanned pregnancies [41]. Similarly, data from a study of pregnant women in New York showed that those with unplanned pregnancies were more likely to report severe or moderate depressive symptoms [42]. The general mental health survey included not only emotional status (depression, anxiety, etc.) but also evaluated women's social function and self-confidence during late pregnancy. The findings suggested that women with unplanned pregnancies are not only more susceptible to emotional disorders but also more vulnerable to lacks in social function and self-confidence. Planning pregnancy plays an important role in helping pregnant women to prepare psychologically for pregnancy and making coping plans for economic situation, knowledge of pregnancy and childbirth as well as pregnant care, in order to release their psychosocial stress and reduce the depression in pregnancy.

At the same time, studies have shown that a woman's pregnancy intentions are often closely related to healthy behaviors and even affect the physical and mental health of the fetus. Unplanned pregnancy is also a decisive factor in women's lack of adequate prenatal care. Women with unplanned pregnancies take less folic acid and delay the timing of pregnancy examinations [43]. Women with unplanned pregnancies are less confident [44], and their pregnancies are associated with a lack of problem-solving skills [45]. Consistent with the results of this study, previous studies have shown that unplanned pregnancy is significantly associated with maternal depression, anxiety, and mental health-related quality of life [46, 47]. Pregnant women with unplanned pregnancy are also susceptible to increased interpersonal sensitivity during pregnancy [48]. Therefore, women with unplanned pregnancies need the attention of family and community at both psychological and physiological levels, and they need adequate social support as well as professional medical help.

Pregnancy increases women's vulnerability and susceptibility to depression, and most pregnant women experience significant physical and physiological changes [49] as well as significant changes in their daily lives, their work environments, and their family dynamics [11]. Anxiety and depression are the most common psychological problems during pregnancy [50–52], symptoms range from mild to severe. In the current study, 19 % of the women reported have depressive symptoms, these findings are closely to the study also investigated in China which showed that about 17.4 % of pregnant women reported depressive symptoms during pregnancy [53].

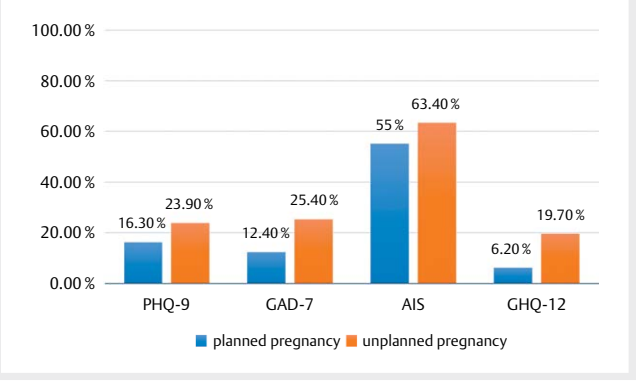
This study showed that the rate of depression in pregnant women was 19 % during late pregnancy. Another study showed that Chinese women's rate of depression during pregnancy is between 15 % and 20 % [9]. In the United States, a study showed that the depression rate of pregnant women was between 10 % and 20 % [54]. However, Compared to another study carried in the US, where 27 % of pregnant women in the third trimester experienced moderate-to-severe depression symptoms, the prevalence of depressive symptoms in this study was lower [55]. Furthermore, in a sample from the Netherlands, depression was prevalent in the third trimester of pregnancy at about 10 % [56]. Therefore, mental health screening and psychological interventions for women in late pregnancy need further attention.

This study shows that the rate of low mental health status is 11 % in women during late pregnancy, and that depression has a significant effect on general mental health status. In current study, the general mental health status estimates women's self-confidence

▶ **Table 2** Multivariate Logistic regression analysis of influencing factors of general mental health status of women in late pregnancy.

Factors	B	Wald-x2	P	OR	95%CI
Relationship with husband	−0.424	0.441	0.507	0.654	0.187, 2.287
Pregnancy intention	1.103	4.263	0.039	3.014	1.058, 8.591
AIS-8	0.95	1.218	0.27	2.586	0.478, 13.973
GAD-7	0.887	1.787	0.181	2.428	0.661, 8.913
PHQ-9	1.395	13.156	0.037	4.033	1.085, 14.993

* $p < 0.05$



▶ **Fig. 5** Positive rate of pregnancy intentions in four questionnaires.

during late pregnancy. A study on the relationship between women's self-efficacy and depression/anxiety symptoms in late pregnancy showed that depression has a moderating effect on self-efficacy as related to self-confidence [54]. This study shows women's depression during late pregnancy has a predictive effect on their general mental health status, and their general mental health level can be evaluated by the presence of depressive symptoms.

In summary, this study reveals that women's pregnancy intentions significantly influence their mental health during late pregnancy, particularly among those facing unplanned pregnancies. Inadequate preparation for the physical and psychological aspects of unplanned pregnancies can contribute to mental health issues. Thus, strengthening mental health screening for women with unplanned pregnancies is essential. Additionally, providing timely physical and mental health education during pregnancy and implementing effective psychological interventions are crucial steps to address the risk factors of pregnancy depression in women with unplanned pregnancies. Furthermore, pregnant women in late pregnancy often experience impairment in social functioning and lower self-confidence. To improve their mental health, promoting social functioning, self-confidence, and self-efficacy should be prioritized. Future research could focus on the influence of family support and education, as a well-functioning family can play a positive role in preventing negative psychological outcomes during pregnancy.

Moreover, this study highlights the significance of depression as a critical indicator of overall mental health status during late pregnancy. Depression can serve as a valuable factor to detect mental health status in pregnant women, and the General Health Questionnaire-12 (GHQ-12) shows promise as an early and rapid screening tool for mental health in this population, enabling early warnings and timely interventions. Looking ahead, with the policy change allowing for more than one child since 2016, it presents an opportunity to investigate the pregnancy stress and differences between women with only one child and those with two children. Nevertheless, the study has certain limitations as it focused on women in a specific area of Shandong Province. Expanding the scope of research to include studies of pregnant women's experiences in different regions would contribute to a more comprehensive understanding of this critical topic.

Conclusion

The study concludes that women's pregnancy intentions significantly impact their mental health during late pregnancy, highlighting the need for strengthened mental health screening for those facing unplanned pregnancies. Additionally, the General Health Questionnaire-12 (GHQ-12) shows promise as an effective screening tool for detecting mental health issues in pregnant women, enabling early interventions. Improving social functioning and self-confidence, as well as providing family support and education, are crucial aspects to enhance pregnant women's mental well-being.

Take Home Message

This study underscores the importance of addressing general mental health issues in women during late pregnancy, revealing an 11 % prevalence of positive detection. Significant factors contributing to mental health problems include the quality of relationships, pregnancy intentions, insomnia, anxiety, and depression. Participants with mental health problems exhibited higher scores on standardized scales. Regression analysis identified unplanned pregnancy and elevated depression scores as influential factors affecting the general mental health of women during late pregnancy. The findings emphasize the need for routine mental health screening and tailored interventions to enhance the well-being of both mothers and babies during this critical period.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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