"STUDY ON THE EFFECT OF LEVEL OF EDUCATION ON THE OCCURRENCE OF ANAEMIA & PREGNANCY SPECIFIC ANXIETY IN PREGNANT WOMEN OF CENTRAL SINDH"

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Abstract

Background: Education enrich female with knowledge and confidence. It may produce significant positive impact throughout life especially during pregnancy. Highly educated female are considered to deal better with conditions like gestational anemia and pregnancy specific anxiety via improved knowledge, medical intervention seeking behaviors during pregnancy, and psychological coping. Lower literacy rate in central Sindh, especially female are provided with lesser opportunities in getting education as compared to their counter parts, may result in an increased occurrence of anemia and anxiety related to pregnancy.

Material & Methods: This cross sectional study conducted with collaboration of "The Department of Gynecology and obstetrics" at Liaquat University Hospital, Hyderabad with Zoology Department of University of Sindh, among individuals from one major city of central Sindh and included 362 participants having pregnancy in their last trimester. Each recruited member of included study subject was tested for hemoglobin levels after been asked detailed demographic and Hamilton anxiety rating scale questionnaires.

Results: Relationship of gestational anemia and Pregnancy Specific Anxiety was evaluated among multiple study subjects in relation to maternal education. 42% of studied participants had lower higher HAM-A scores while levels of Hemoglobin in 64% patients were below normal limit for pregnancy. P-value <0.0001 is substantial enough to indicate strongly negative relationship of PSA and anemia with illiteracy.

Conclusion: Direct inverse relationship of educational level with anemia and PSA has significantly established through this study. Treatment of GA may not only require nutritional supplementation or psychiatrics intervention but educating mothers regarding anemia and anxiety may prove to be beneficial.

INTRODUCTION

Hyderabad district have more than 70% urban population even though when it comes to educate female significant gender disparities persist. Overall having a higher literacy rate of 70% among the population aged 10 and above and do surpass many districts of Sindh. To maintain equality and

improved growth of community for all children & educated mothers, there should be no such gap. According to the Pakistan Emergency Situational Analysis, the literacy rate for females aged 10 and above is 66%, compared to 75% for males as reported by Reform Support Unit. (2021, November). Stevens, G. A. et al, 2013 reported that higher maternal education has significant positive impact for child and mother health. Kim & Lee, 2022 suggested higher blood supply during pregnancy to avoid gestational anemia (GA) (Kim & Lee, 2022). Nguyen et al., 2022 predicted higher demands of nutrients like iron, folic acid and vitamin B12 during pregnancy. Patel & Singh, 2023 estimated 38% occurrence of GA in pregnant women globally, this peaking is explained by Smith A., et al (2023) as because of increased iron demand due to physiological changes. Worldwide accepted definition of GA is given by World Health Organization as blood hemoglobin (Hb) level below to 11 g/dL (WHO, 2023).

Garcia et al., 2022 highlighted a distinct type of anxiety during pregnancy, commonly called Pregnancy specific anxiety, features commonly seen are persistent fears and uncertainties regarding maternal and fetal outcomes of pregnancy. Multiple studies have identified many risk factors in relation to PSA, education status of mother is one among them (Biaggi et al., 2016 & Gelaye et al. 2016). Pinto-Meza et al., 2013 estimated a negative relationship of education and anxiety. Education is a basic life necessity which has diverse effects on life and may reduce anxiety via many interlinked mechanisms such as enhanced coping skills, sense of control, and better understanding of knowledge and health literacy, which help women manage the psychological challenges of pregnancy more effectively (Leach et al., 2016). Ahmed et al 2024, highlighted that anemia during pregnancy can affect mood and cognitive functions. Chowdhury, R., & Rahman, M. (2023) emphasized that irregularity in treatment is common in pregnant women due to limited education or counseling. This study aims to investigate the occurrence of PSA and anemia in pregnant female with the different levels of education in central, Sindh and add to effective strategies to tackle such conditions.

MATERIAL AND METHODS

Study Design & Setting: This cross sectional study conducted with collaboration of "The Department of Gynecology and obstetrics" at Liaquat University Hospital, Hyderabad and their Diagnostic and Research Laboratory with Zoology Department of University of Sindh, from **February 2024 to December 2024**. The study is designed to establish link between maternal education status and higher incidences of gestational anemia and PSA among pregnant women.

Participants: By using "Non- probability Purposive" sampling technique, sample size was calculated to be 174 via Open Epi Calculator on the basis of prevalence of educational status of female in district Hyderabad, then targeted 174 pregnant women in third trimester were recruited to assess GA and PSA. Our targeted study subject were inclusive of females having singleton pregnancy age 17-38 years, contrary we excluded women having twin pregnancy, showing signs of essential hypertension or on medication for hypertension, depression, psychotic or endocrine disorders.

Data Collection: All excluding participants who mismatched the selection criteria, only selected women were provided consent preformats and objectives of study were explained to subjects in their native language and no financial burden imposed on them for this study. Initially, pregnant women were interviewed for demographic features like age and level of study then a medical professional assessed all subjects for diagnosis of anxiety through "Hamilton Anxiety Rating Scale-A". At the end, blood samples were collected from each study subject hemoglobin levels were estimated via fully automated analyzer.

Ethical Consideration: Ethical Review Committee of University of Sindh, Jamshoro issued letter No DRGS/2578 dated 29-10-2024, the study was conducted after approval letter received.

Statical Analysis: Initially, data was computed and elaborated by MS excel. Demographic features and status of GA and PSA shown as frequencies and percentages & Chi-Square test was utilized to assess significance.

RESULTS AND DISCUSSION

Demographic presentation of study variables is plotted in Table I to specify frequencies and percentages of different variables among Pregnant Women included in our study.

Table: I Frequencies of Demographic features among variables (n=174)

Demographic Variable	Frequency	Percentage
Age Group		
• 20 or less years	25	15%
• 21-30 years	84	48%
• >30 years	67	37%
Education Status		
• Uneducated	36	21%
• Primary	40	23%
• Matric	46	26%
• Intermediate	30	17%
• Graduate or above	22	13%
Anxiety Status		
• PW with PSA	73	42%
• PW without PSA	101	58%
Anemia Status		
• PW with Anemia	111	64%
• PW without Anemia	63	36%

In assessment of demographic characters, three groups of PWs are formed according to age. 48% participants were age 21-30 years or below, on the other hand 37% were having age > 30 years, while only 15% were 20 years or below. Evaluation of maternal educational status among all studied participants is also featured in Table I. Among 174 study participants, only 22 i.e. 13% completed graduation or studied above it. This clearly shows very low literacy rate among women in district Hyderabad. Other educational status were frequencies estimated as 30, 46, 40 & 36 making percentages of studied population to be 17%, 26%, 23% & 21% among intermediate, matriculation being highest, primary and illiterate or uneducated respectively.

The Table I, also emphasized on studied variables among PWs and presented a comprehensive analysis of the PW participants (n=174) between PSA (n=73) and non-PSA (n=101) groups. This clearly suggested that females of central Sindh has a higher prevalence of anxiety related to pregnancy with 42% among our studied group, similar findings were found by Somerville et al., 2014 who calculated 43% of PSA while Fairbrother et al., suggested that being heightened in last trimester and younger mothers with less education and lack of attending of awareness in respect to pregnancy. Recently, Viswasam et al. also estimated similar trend of anxiety in PWs that up to 39%. In Herat Afghanistan, Niazi et al 2023 also estimated 40% prevalence of PSA.

The data of Table I characterized 111 anemic PWs making 64% prevalence on the basis of participants' Hb level in the blood. Sivaganesh, Porko & Priyadharishini, 2019 during their study, found 60% GA among 320 pregnant women, most prevalence of anemia type was microcytic & hypochromic anemia i.e. commonly due to Iron deficiency. It may also be added that, Clotilda et al., 2024 analyzed the prevalence of GA in Burundi, Togo, and India, which were also around our finding as, 66.8%, 60.4%, and 60.3% respectively.

Table: II Frequencies of Educational Status between PW with & without PSA

Variable		Pregnant Women (n=174)		Total	p-Value
		With PSA	Without PSA		
Educational Status	Uneducated	21	15	36	<0.001
		29%	15%	21%	
	Primary	20	20	40	
		27%	20%	23%	
	Matric	19	27	46	
		26%	27%	26%	
	Intermediate	9	21	30	
		12%	21%	17%	
	Graduate or Above	4	18	22	
		5%	18%	13%	
Total	Total	73	101	174	
		42%	58%	100%	

Chi-Square test was applied. P-value level < 0.05 is significant.

From Table II, it is noted that a substantial portion of PSA participants are uneducated (29%) compared to Non-PSA participants (15%), while a significant proportion of Non-PSA participants hold graduate-level qualifications (18%) versus just 5% in the PSA group; With a p-value of <0.001, the educational status shows a highly significant relationship with PSA status, highlighting education as a potential factor influencing participants' health literacy and health-seeking behavior. Similar to our study, Khan, M.A., et al. (2022) also found highest frequency of PSA in uneducated group, peaking up 50%. Gul, Ejaz, et al. (2019) evaluated 45.3% anxiety in uneducated PWs.

Table: III Frequencies of Educational Status between PW with & without Anemia

Variable		Pregnant Women (n=174)		Total	p-Value
		Without Anemia	With Anemia		
Educational Status	Uneducated	5	31	36	<0.001
		14%	86%	21%	
	Primary	9	31	40	
		22%	78%	23%	
	Matric	22	24	46	
		48%	52%	26%	
	Intermediate	15	15	30	
		50%	50%	17%	
	Graduate or Above	12	10	22	
		55%	45%	13%	
Total	Total	63	111	174	
		36%	64%	100%	

Chi-Square test was applied. P-value level < 0.05 is significant.

Statistical significance is provided by the relationship between educational status and anemia, with a p-value of strongest protective associations were seen with higher levels of educational attainment, especially for graduate-level education, where anemia prevalence was much lower"; similarly alem et al., 2023 also denoted lowest anemia incidence among mothers with higher levels of education hence, this

reinforces the notion that education is fundamentally essential for health literacy and how it directly impacts people's understanding of nutrition and access to healthcare.

CONCLUSION

This can be concluded from our study that lower education status or illiteracy of mother have significantly negative relationship with GA and PSA and hence have substantial impact on overall health during pregnancy. Educational programs may thus contribute to a decrease in the prevalence of anemia or anxiety, in such population. We should not only provide targeted anxiety treatment or nutritional

supplementation but also strengthen our community awareness programs in communities with special focus on areas with higher illiteracy rate among females.

CONFLICT OF INTEREST

No any conflict of interest.

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