



An Evaluatory Study To Assess The Risk Factors Regarding Preconceptional Health Among College Women At Selected Nursing Colleges In Bhopal, M.P.

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Abstract: Background: Preconception care (PCC) is critical for optimizing maternal and fetal health, yet awareness remains low among young women. College-aged women represent a key demographic for PCC interventions. **Objectives:** To assess knowledge and risk factors regarding preconceptional health among college women and to determine associations with socio-demographic variables. **Methods:** A quantitative, cross-sectional evaluatory study was conducted among 100 female nursing students aged 18-25 in Bhopal, selected via purposive sampling. Data were collected using a demographic proforma, a 15-item Preconception Knowledge Evaluation Tool (PKET), and a 35-item Risk Factor Diagnostic Scale (RFDS). Analysis used descriptive statistics and Chi-square test ($p < 0.05$). **Results:** 93% of participants had moderate to high knowledge, yet 77% were at moderate to high risk. Behavioural and lifestyle history (62%) and mental health (48%) were the predominant risk domains. A significant association was found between education level and risk levels ($p = 0.026$). No significant associations were found between knowledge and any socio-demographic variables. **Conclusion:** A significant knowledge-practice gap exists among nursing students. Despite good theoretical knowledge, high-risk behaviours persist, particularly in lifestyle and mental health domains. Structured PCC education and wellness programs are urgently needed in nursing curricula.

Keywords: Preconception Care, Risk Factors, Nursing Students, Knowledge Assessment, Reproductive Health

1. INTRODUCTION

Preconception care is an essential but often overlooked component of maternal and child health services. It involves providing biomedical, behavioural, and social health interventions to women and couples before conception to ensure a woman enters pregnancy in optimal health [1]. Organogenesis, the formation of the foetus's organs, is completed during the first trimester. By the time a woman first visits an antenatal clinic, it is often too late to provide preventive advice, as many adverse factors have already taken effect [2].

The period before pregnancy is critical for identifying risk factors, starting nutrient supplementation, and managing overall healthcare. Despite ongoing efforts, 40% of pregnancies are still reported as unplanned, with over 70% occurring in women aged 15 to 19 years [3, 4]. Primary care clinics are uniquely positioned to address preconception health, as non-pregnant women often visit these clinics more frequently [5]. However, a lack of awareness about preconception care is widely recognized as a major barrier to its utilization [6].

As student nurses poised to enter the healthcare workforce, we recognize a dual responsibility: towards our own health and that of our peers, and towards our professional role as future frontline healthcare providers. This study allows us to identify the specific knowledge gaps and high-risk behaviours prevalent among nursing students, enabling us to develop empathetic and effective patient education strategies.

2. OBJECTIVES

1. To assess women's preconceptional health at selected nursing colleges.
2. To identify risk factors and risk level associated with preconceptional health of college women.
3. To assess knowledge regarding preconceptional health of women of selected nursing college.
4. To find out the association between knowledge regarding preconceptional health and the socio-demographic variables.
5. To find out the association between the risk level of women regarding preconceptional health and the socio-demographic variables.

3. METHODOLOGY

3.1 Research Approach & Design:

A quantitative research approach with a cross-sectional evaluatory study design was used to systematically evaluate knowledge adequacy and diagnose risk prevalence.

3.2 Setting and Population:

The study was conducted at selected nursing colleges in Bhopal, Madhya Pradesh. The target population was female nursing students aged 18-25 years.

3.3 Sample and Sampling Technique:

A total of 100 college women who met the inclusion criteria were selected using a purposive sampling technique.

3.4 Data Collection Tools:

Data was collected using a self-administered tool with three sections:

- **A. Demographic Proforma:** Captured variables like age, marital status, religion, education level, and employment status.
- **B. Preconception Knowledge Evaluation Tool (PKET):** A 15-item questionnaire scored 0-1 (Total: 15 points). Scores were interpreted as: ≤ 5 : Low; 6-10: Moderate; ≥ 11 : High.
- **C. Risk Factor Diagnostic Scale (RFDS):** A 35-item scale across six domains (Reproductive, Mental, Behavioural, Family, Medical, Environmental health). Scores were interpreted as: 0-35: Low risk; 36-70: Moderate risk; 71-105: High risk.

3.5 Validity and Reliability:

The tool was validated by medical and nursing experts from the Obstetrics and Gynaecology department. The instruments demonstrated acceptable internal consistency in the pilot test (n=30) with Cronbach's alpha coefficients of 0.78 for the PKET and 0.81 for the RFDS.

3.6 Data Analysis:

Data were analysed using descriptive statistics (frequencies, percentages) and inferential statistics (Chi-square test) with a significance level of $p < 0.05$.

4. RESULTS

4.1 Socio-Demographic Characteristics of Participants (n=100):

The majority of participants were in the 24-25 years age group (42%), unmarried (78%), and of Hindu religion (87%). Over half (52%) were BSc Nursing students, and 64% were unemployed.

4.2 Assessment of Knowledge Regarding Preconceptional Health:

- High Knowledge: 43%
- Moderate Knowledge: 50%
- Low Knowledge: 7%

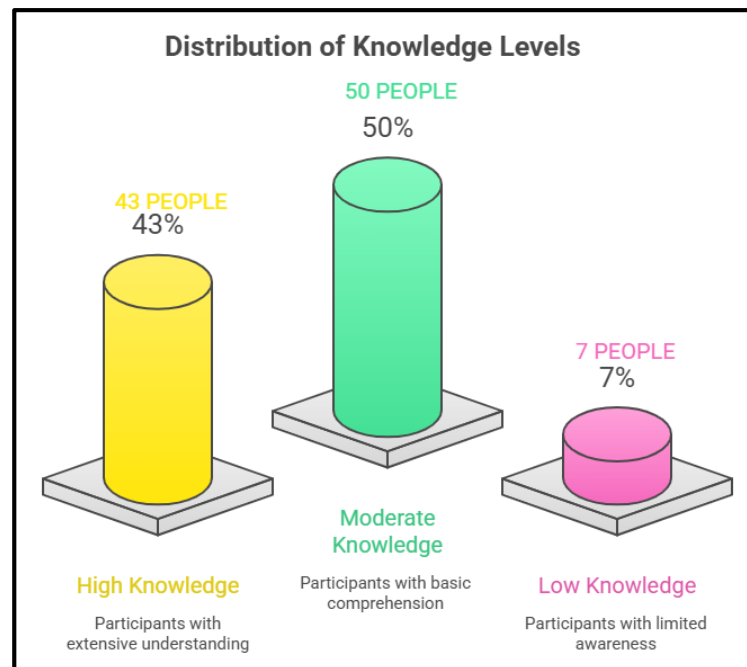


Figure 1 shows that 93% of participants had moderate to high knowledge regarding preconceptional health, with only 7% falling into the low knowledge category.

The knowledge assessment revealed that 43% of participants had high knowledge, 50% had moderate knowledge, and 7% had low knowledge regarding preconceptional health. Key knowledge gaps were identified: only 78% correctly identified folic acid's role in preventing neural tube defects; 50% knew the correct timing for genetic counselling; and knowledge about essential vaccinations was suboptimal (60% answered correctly).

4.3 Assessment of Risk Factors and Risk Levels:

❖ Overall Risk Level Distribution Among Participants (n=100)

- Low Risk: 23%
- Moderate Risk: 40%
- High Risk: 37%

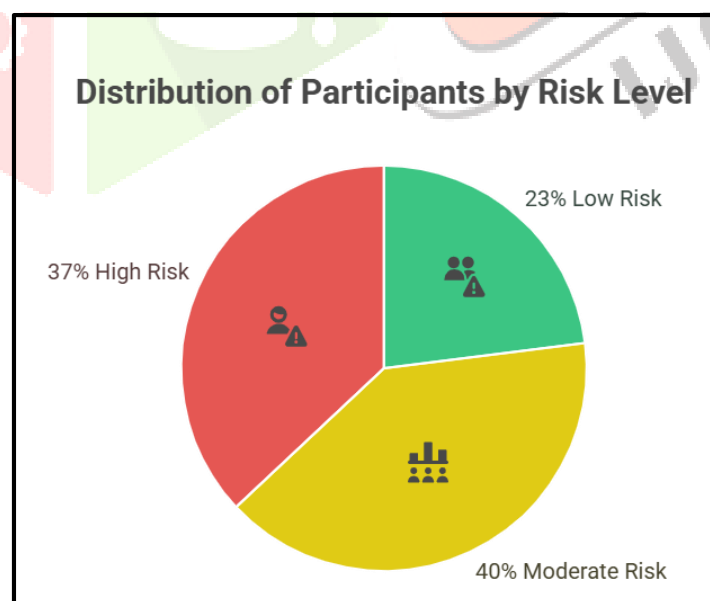


Figure 2 shows that 77% of nursing students were at moderate to high risk for adverse preconception health outcomes, with only 23% in the low-risk category.

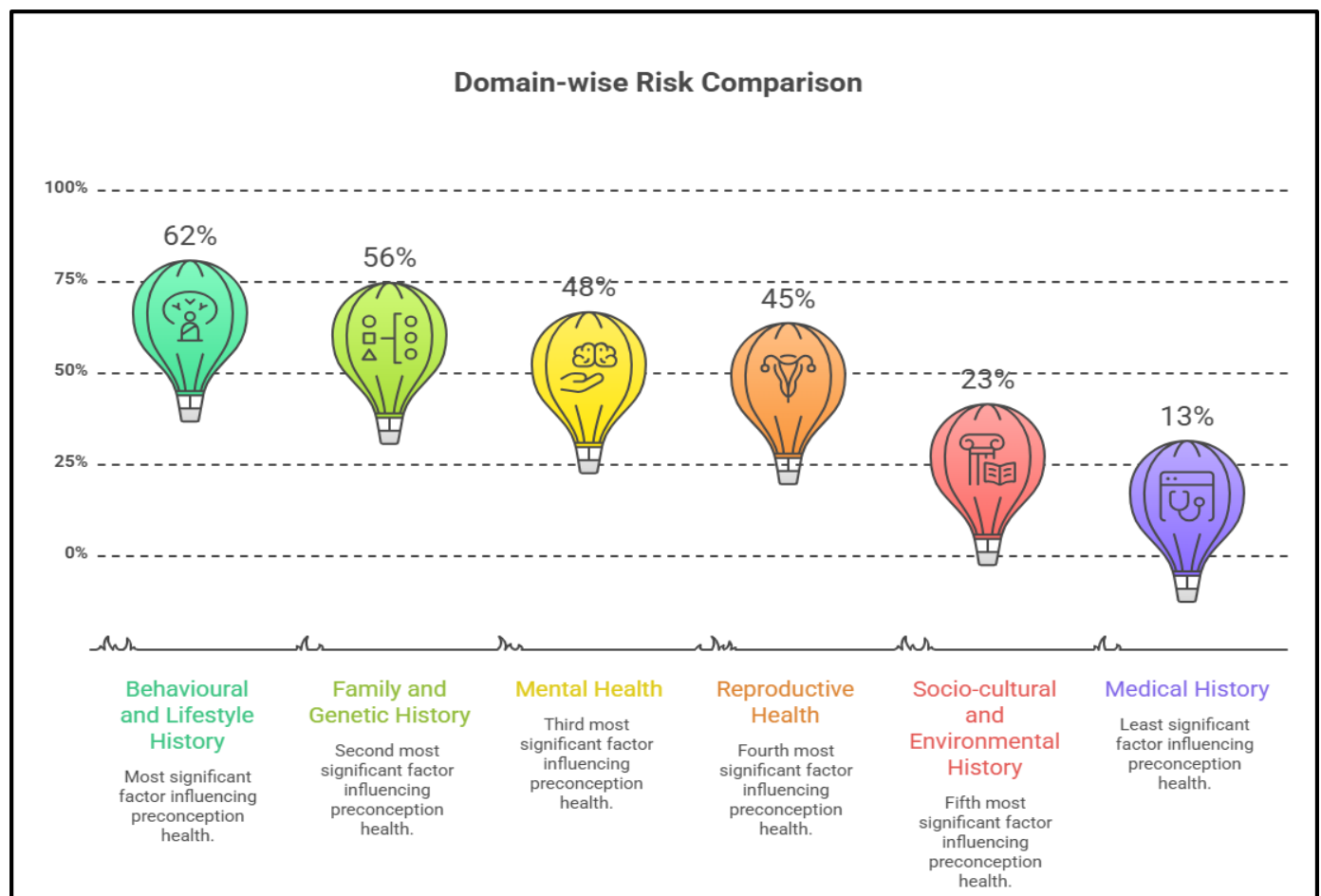


Figure 3 illustrates the percentage of participants at high risk across six preconception health domains. Behavioural and lifestyle factors emerged as the most concerning domain (62%), followed by family and genetic history (56%) and mental health (48%).

Table 1 Distribution of College Women According to Risk Levels Across Different Domains (n=100)

Domain / Risk Factor Category	High Risk (%)	Moderate Risk (%)	Low Risk (%)
Behavioural and Lifestyle History	62%	28%	10%
Mental Health	48%	36%	16%
Family and Genetic History	56%	33%	11%
Medical History	13%	33%	54%
Reproductive Health	45%	31%	24%
Socio-cultural and Environmental History	23%	35%	42%

Interpretation: Domain-wise risk distribution revealed that Behavioural and Lifestyle history was the most predominant risk domain (62% at high risk), followed by Family and Genetic history (56% at high risk) and Mental Health (48% at high risk).

❖ OVERALL RISK DISTRIBUTION BY CATEGORY/RISK FACTORS:

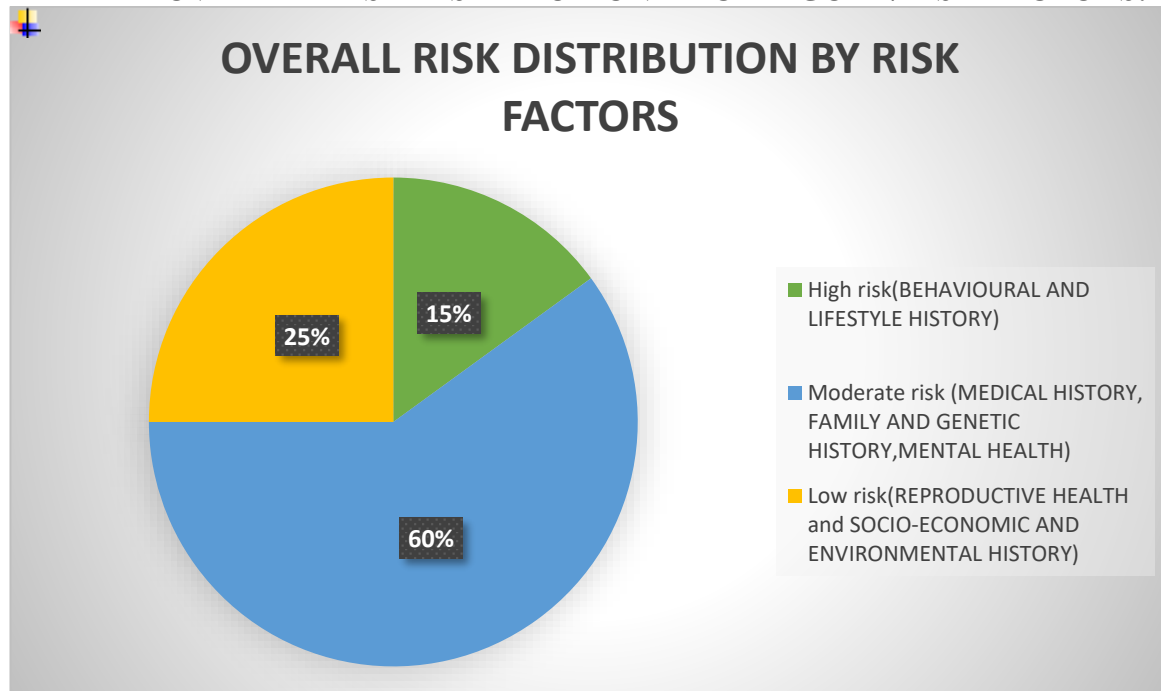


Figure 4 breaks down risk categories, with behavioural and lifestyle emerging as the highest concern (60%), followed by medical history, family and genetic history, mental health (25%), while reproductive health, socio-economic and environmental history posed the lowest risk (15%).

4.4 Association with Socio-Demographic Variables:

- **Knowledge:** The Chi-square test found no statistically significant association between knowledge levels and any socio-demographic variable (age, religion, education, marital status, employment status), with all p-values > 0.05 (Table 2).
- **Risk Level:** A statistically significant association was found between education level and risk levels ($\chi^2 = 14.3$, $p = 0.026$). Students with higher education (BSc Nursing) exhibited lower risk profiles. No significant associations were found for other variables (Table 3).

Table 2: Association Between Knowledge Regarding Preconceptional Health and Socio-Demographic Variables (n=100)

GRAPHIC		LOW LEVEL KNOWLEDGE		MODERATE LEVEL KNOWLEDGE		HIGH LEVEL KNOWLEDGE		CHI-SQUARE	p-VALUE	DEGREES OF FREEDOM (DF)	SIGNIFICA SIGNIFICA
	1	0	0.0%	7	87.5%	1	12.5%	6.7	0.350	6	NS
	2	1	5.6%	10	55.6%	7	38.9%	6.7	0.350	6	NS
	3	3	7.1%	17	40.5%	22	52.4%	6.7	0.350	6	NS
	4	3	9.4%	16	50%	13	40.6%	6.7	0.350	6	NS
N	1	1	16.7%	1	16.7%	4	66.7%	7.16	0.306	6	NS
	2	6	7.1%	44	51.8%	35	41.2%	7.16	0.306	6	NS
	3	0	0%	5	71.4%	2	28.6%	7.16	0.306	6	NS
	4	0	0%	0	0.0%	2	100%	7.16	0.306	6	NS
ON	1	4	7.7%	23	44.2%	25	48.1%	5.26	0.511	6	NS
	2	1	5.0%	13	65.0%	6	30%	5.26	0.511	6	NS
	3	1	6.2%	6	37.5%	9	56.2%	5.26	0.511	6	NS
	4	1	8.3%	8	66.7%	3	25%	5.26	0.511	6	NS
	1	0	0%	1	100%	0	0%	5.12	0.275	4	NS
	2	0	0%	14	66.7%	7	33.3%	5.12	0.275	4	NS
	3	7	9%	35	44.9%	36	46.2%	5.12	0.275	4	NS
MENT	1	0	0.0%	6	54.5%	5	45.5%	5.83	0.443	6	NS
	2	1	4.8%	8	38.1%	12	57.1%	5.83	0.443	6	NS
	3	0	0.0%	1	25.0%	3	75%	5.83	0.443	6	NS
	4	6	9.4%	35	54.7%	23	35.9%	5.83	0.443	6	NS

Interpretation: This tool mentioned above shows us there is no association between the knowledge regarding preconceptional health and the socio demographic variables. The association is assessed by considering value of $P \leq 0.05$ level. The table 2 shows that there is no significant association between the socio demographic variables and the knowledge among college women regarding preconceptional health as none of the socio demographic variables shows p value ≤ 0.05 .

Thus Hypothesis 1 is disproved that there is significant association between knowledge regarding preconceptional health and the socio demographic variables.

Table 3: Association Between Risk Level Regarding Preconceptional Health and Socio-Demographic Variables (n=100)

SOCIO-DEMOGRAPHIC VARIABLE	LOW RISK LEVEL	MODERATE RISK LEVEL	HIGH RISK LEVEL	CHI-SQUARE	p-VALUE	DEGREES OF FREEDOM (DF)	SIGNIFICANT OR NON-SIGNIFICANT
AGE	1	12.5%	25%	5.48	0.484	6	NS
	2	27.8%	50%	5.48	0.484	6	NS
	3	23.8%	33.3%	5.48	0.484	6	NS
	4	21.9%	46.9%	5.48	0.484	6	NS
SEX	1	33.3%	16.7%	6.66	0.354	6	NS
	2	23.5%	43.5%	6.66	0.354	6	NS
	3	14.3%	28.6%	6.66	0.354	6	NS
	4	0%	0%	6.66	0.354	6	NS
EDUCATION	1	19.2%	44.2%	14.3	0.026	6	S
	2	5%	40%	14.3	0.026	6	S
	3	31.2%	37.5%	14.3	0.026	6	S
	4	58.3%	25%	14.3	0.026	6	S
RELIGION	1	0%	0%	6.93	0.139	4	NS
	2	4.8%	47.6%	6.93	0.139	4	NS
	3	28.2%	38.5%	6.93	0.139	4	NS
OCCUPATION	1	9.1%	36.4%	6.41	0.379	6	NS
	2	9.5%	52.4%	6.41	0.379	6	NS
	3	25%	25%	6.41	0.379	6	NS
	4	29.7%	37.5%	6.41	0.379	6	NS

Interpretation: This tool mentioned above shows us the association between the risk level of college women regarding preconceptional health and the socio demographic variables. The association is assessed by considering value of $P \leq 0.05$ level. Table 3 displays that there is **significant association between the socio demographic variable education level BSc Nursing, GNM, Graduation and High school and risk level of college women regarding preconceptional health with $p \leq 0.05$ as 0.026** while other sociodemographic variables show no significant association.

Thus Hypothesis 2 is partially proved that there is significant association between risk level regarding preconceptional health and the socio demographic variables.

5. DISCUSSION

This study aimed to assess the knowledge and risk factors for preconceptional health among nursing students in Bhopal. The findings reveal a significant paradox: despite 93% of participants having moderate to high knowledge about preconception care (Figure 1), 77% were identified as being at moderate to high risk (Figure 2). This knowledge-practice gap is a critical finding, suggesting that theoretical knowledge does not automatically translate into healthy behaviours.

The high-risk profile is primarily driven by poor lifestyle habits (62% high risk) (Figure 3, Table 1), including inadequate nutrition, insufficient physical activity, and poor stress management, which aligns with studies by Smith and Brown (2020) who reported similar unhealthy lifestyle choices among college women [7]. The second major domain was mental health (48% high risk), where high levels of stress and anxiety were reported, echoing the findings of Taylor et al. (2019) on the role of academic stress in reproductive health [8]. Family and genetic history also emerged as a significant domain (56% high risk),

indicating that many participants may lack awareness of hereditary conditions that could affect future pregnancies.

The lack of association between knowledge and any demographic variable, including education (Table 2), reinforces the idea that knowledge alone is insufficient; targeted behavioural interventions are needed. This suggests that while students possess adequate theoretical understanding, structural and psychological barriers—such as academic stress, limited time, and lack of healthy food options—prevent them from adopting healthy lifestyles.

The significant association between higher education (BSc Nursing) and lower risk levels is an important finding (Table 3). It suggests that formal training in health sciences may equip students with better health literacy and self-care practices. This is consistent with the CDC's (2019) findings that lower educational attainment contributes to higher risk profiles [4]. Interestingly, students with high school education showed the highest proportion of low-risk individuals (58.3%), which may reflect a smaller sample size in this category rather than a true protective effect. Further research with larger, more balanced samples is needed to clarify this finding.

6. CONCLUSION

This study concludes that while nursing students have a solid theoretical foundation in preconception health, they are not translating this knowledge into practice, as evidenced by the high prevalence of lifestyle and mental health risks. The most vulnerable group appears to be students with lower levels of formal education. There is an urgent need to bridge this knowledge-practice gap through the integration of practical, application-based modules on preconception health into the nursing curriculum. College wellness programs focusing on stress management, nutrition, and lifestyle modification are essential. By empowering this cohort of future healthcare providers, we can improve their own health and their ability to effectively counsel and advocate for their patients, ultimately contributing to better maternal and child health outcomes.

7. LIMITATIONS AND RECOMMENDATIONS

Limitations:

- The study is limited to nursing students in one city, which limits the generalizability of findings to the broader population of young women.
- The sample size was limited to 100.
- The study relied on self-reported data, which may be subject to recall bias.
- The cross-sectional design captures data at a single point in time, limiting the ability to infer causality.

Recommendations:

- **For Nursing Educators:** Integrate mandatory, practical modules on preconception health into the curriculum, including hands-on activities like risk assessment exercises and lifestyle modification planning.
- **For College Administrators:** Implement campus-wide wellness programs, including mental health counselling, nutrition workshops, and annual health screening camps.
- **For Healthcare Providers:** Screen young women for preconception risk factors during routine visits, even if they are not actively planning pregnancy.
- **For Future Research:** Conduct multi-centric studies with larger, more diverse samples to validate findings and develop scalable, culturally appropriate interventions.

8. REFERENCES

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