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PARENTAL PERSPECTIVES ON ADOLESCENT GIRLS' HEALTH KNOWLEDGE: AWARENESS, BARRIERS, AND RESPONSIBILITY

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Abstract

Background: Adolescent girls in urban Pakistan often lack adequate health knowledge due to limited parent-daughter communication, despite parents recognizing their responsibility for guidance on puberty, nutrition, and sexual/reproductive health.

Objective: To examine parental awareness, barriers, and predictors of regular health discussions with adolescent daughters in Karachi using a sequential explanatory mixed-methods design.

Methods: A cross-sectional survey of 320 parents was followed by five focus group discussions (FGDs). Quantitative data underwent descriptive analysis, chi-square tests, and binary logistic regression (outcome: regular discussion yes/no). Qualitative data were thematically analyzed to explain quantitative findings.

Results: Although 71% of parents reported high awareness of daughters' health needs, only 38% engaged in regular discussions. Cultural taboo was the primary barrier (55%), followed by lack of knowledge (27%). Logistic regression showed high awareness (adjusted OR 2.87, 95% CI 1.72–4.79, $p<0.001$) and health program exposure (OR 2.14, 95% CI 1.28–3.58, $p=0.004$) independently predicted regular discussions, while strong cultural taboo perception suppressed them (OR 0.48, 95% CI 0.28–0.82, $p=0.007$). FGDs revealed parental SRH discussion anxiety, e-Health confidence gains, and support for school/mosque-based interventions.

Conclusion: Parents demonstrate awareness but face cultural barriers limiting health communication. Targeted school- and community-based programs can bridge this gap by enhancing skills and reducing stigma, with potential to substantially improve adolescent girls' health knowledge in Karachi.

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INTRODUCTION

Background

Urban Pakistan faces a complex crossroads in adolescent health, with Karachi a city of over 20 million serving as a representative microcosm of both opportunity and challenge. Adolescent girls, who comprise a significant and growing segment of the population, remain disproportionately affected by lack of health knowledge, limited access to reproductive healthcare, and entrenched sociocultural expectations (Zafar et al., 2025; Gulzar et al., 2022; Rizvi et al., 2024; Meherali et al., 2025). National health surveillance reports indicate that nearly 70% of adolescent girls in Karachi lack adequate education on puberty, nutrition, mental health, sexual and reproductive health (SRH), and communicable disease prevention (BMJ Open, 2025).[Error! Bookmark not defined.] These gaps contribute to higher rates of early pregnancy, anemia, and preventable infections (Hussain et al., 2025; Khan et al., 2025).

The role of parents is crucial they serve as the principal gatekeepers of health awareness for adolescent girls. In practice, however, many Karachi-based parents report difficulties in effectively communicating health knowledge, citing barriers such as social taboos, fear of judgment, and insufficient resources or training (Melese et al., 2024; Khan et al., 2025). Despite policy shifts towards school-based health promotion (School e-Health Education Program Pakistan, Khan et al., 2025),[Error! Bookmark not defined.] parental engagement remains the most influential determinant of girls' health behaviors (Rizvi et al., 2024).

Importance and Rationale

Educating adolescent girls on health is associated with a cascade of societal benefits reduced disease burden, improved maternal outcomes, and stronger national productivity (BMJ Public Health, 2024).[Error! Bookmark not defined.] The global move towards Sustainable Development Goals (SDGs), particularly Goal #3 (Good Health and Well-Being) and Goal #5 (Gender Equality), hinges on bridging the knowledge gap at home (UNICEF Pakistan, 2023).

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Despite this, the literature indicates that health knowledge transmission in Pakistani households is deeply entangled in patterns of gendered communication, restricted autonomy, and traditional beliefs (Rizvi et al., 2024; Meherali et al., 2025).[Error! Bookmark not defined. Error! Bookmark not defined.] To design purposeful interventions, it is vital to first understand parental perspectives their awareness, perceived barriers, and sense of responsibility.

Research Objective

To evaluate parental perspectives on adolescent girls' health knowledge in Karachi, focusing on awareness, perceived barriers, and parental responsibility.

Scope, Limitations, and Structure

This study targets urban communities in Karachi, employing both quantitative and qualitative methods to yield robust and generalizable insights. Limitations include non-longitudinal design, reliance on self-report, and restriction to urban populations.

OPERTIONAL DEFINITIONS

- **Adolescent girls:** Females aged 10-19 years enrolled in secondary schools in Karachi.
- **Health knowledge:** Awareness and understanding of basic concepts of puberty, nutrition, SRH, communicable diseases, and mental health as measured by a structured questionnaire (Gulzar et al., 2022).
- **Parental awareness:** Parental recognition and understanding of adolescent health needs and issues.
- **Parental barriers:** Internal and external challenges parents face in transmitting health knowledge, e.g., cultural taboos, communication limitations, social stigma.
- **Parental responsibility:** Parents' perceived duty and involvement regarding providing health knowledge to adolescent daughters.

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LITERATURE REVIEW

Conceptual Framework

This study adopts the Social-Ecological Model (SEM) to explain how individual, familial, and societal factors influence parental roles in adolescent health education (Rizvi et al., 2024).[Error! Bookmark not defined.] The Theory of Planned Behavior (TPB) complements the SEM, suggesting that parental intentions, shaped by attitudes, norms, and self-efficacy, predict communication behavior (Melese et al., 2024).[Error! Bookmark not defined.]

Global Context

International research reveals that parental involvement reduces risky behaviors and improves sexual health literacy (Melese et al., 2024).[Error! Bookmark not defined.] Studies across South Asia highlight parental capability as a key determinant of girls' access to health information and services (Hussain et al., 2025).

The Pakistani Landscape

- **Parental Awareness:** Multiple studies document that while parents in Karachi generally know about adolescence as a critical developmental phase, they lack nuanced knowledge of health risks specific to urban adolescent girls (Gulzar et al., 2022; Rizvi et al., 2024; Hussain et al., 2025).[Error! Bookmark not defined. Error! Bookmark not defined. Error! Bookmark not defined.]
- **Barriers:** Cultural stigma remains the foremost barrier. In Karachi, shame associated with discussing SRH, menstruation, and puberty is reinforced by religious beliefs and community norms (BMJ Open, 2025).[Error! Bookmark not defined.]
- **Responsibility:** Studies show that 75% of Karachi parents feel responsible for daughters' health education but only 29% engage in meaningful discussions (Khan et al., 2025).[Error! Bookmark not

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defined. The gap is attributed to fear of encouraging premature sexual activity and limited communication skills (Meherali et al., 2025).Error! Bookmark not defined.

School-Based and Digital Interventions

Programs like School e-Health Education Program Pakistan (eSHEPP) have shown promise in improving health awareness, with positive spillover effects on parental confidence (Khan et al., 2025).Error! Bookmark not defined. However, interventions are currently sporadic and unevenly implemented.

Recent Evidence from Karachi

A qualitative study by Rizvi et al. (2024)Error! Bookmark not defined. underscored the disconnect between what parents know and what they feel comfortable discussing. Parents highlighted social consequences, fear of misinterpretation, and lack of training as core barriers. Another recent study (Khan et al., 2025)Error! Bookmark not defined. showed that adolescent girls whose parents participated in health seminars had significantly higher scores in nutritional, SRH, and mental health awareness.

Community and Policy Recommendations

Experts advocate for culturally sensitive parent training, integration of health education in schools, and greater collaboration between health and educational sectors (BMJ Public Health, 2024). Recognizing the role of fathers, mothers, and extended family is essential for a holistic communication strategy.

RESEARCH METHODOLOGY

Study Design

This study adopted a sequential explanatory mixed-methods design. The first phase consisted of a quantitative, cross-sectional survey of parents of adolescent girls in Karachi. The second phase

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involved qualitative focus group discussions (FGDs) to explore and explain the quantitative findings in greater depth.

Study Setting

The study was conducted in selected public and private secondary schools and nearby community centers in urban Karachi, Pakistan. Data were collected over a three-month period from March to May 2024. Karachi is a culturally diverse metropolitan city, which allowed inclusion of parents from different socioeconomic and ethnic backgrounds.

Study Population and Eligibility Criteria

The study population comprised parents or primary caregivers of school-going adolescent girls aged 10–19 years enrolled in grades 6–10.

Inclusion criteria were:

- Parent or legal guardian of at least one adolescent girl enrolled in the selected schools.
- Resident of Karachi for at least one year.
- Able to read Urdu or English and willing to provide informed consent.

Exclusion criteria were:

- Parents of girls with severe physical or cognitive disabilities that limited participation in routine school activities.
- Parents who were health professionals (to avoid over-representation of medically informed respondents).

Sample Size and Sampling Technique

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For the quantitative phase, a sample size of 320 parents was calculated using a single-population proportion formula, assuming a 50% level of adequate parental awareness, 95% confidence interval, 5% margin of error, and an additional 10% to account for non-response. A multistage sampling technique was used. First, five schools (two private, three public) and three community centers were purposively selected from different towns of Karachi to capture socioeconomic diversity. Within each institution, systematic random sampling was applied to recruit eligible parents during parent–teacher meetings and community health events.

For the qualitative phase, a purposive subsample of survey respondents was invited to participate in focus groups. A total of five FGDs were conducted, each involving 8–10 parents, until thematic saturation was reached.

Data Collection Tools

Parental Survey Questionnaire

A structured, self-administered questionnaire was developed after reviewing relevant literature and consulting public health and adolescent medicine experts. The questionnaire consisted of five sections:

1. Socio-demographic information (age, gender, education, occupation, family type, monthly income, number and ages of children).
2. Parental awareness of adolescent girls' health needs (puberty, nutrition, sexual and reproductive health, communicable diseases, mental health).
3. Perceived barriers to health communication (cultural taboo, lack of knowledge, communication difficulty, lack of time, other).
4. Parental responsibility and practices (frequency and content of health discussions, perceived role of parents versus schools).
5. Exposure to health education programs (school-based sessions, e-Health interventions, and community workshops).

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Most items were measured on 5-point Likert scales, with additional multiple-choice and yes/no questions. A composite score of adolescent health knowledge and parental engagement was created by summing relevant items.

Focus Group Discussion Guide

A semi-structured FGD guide was used to explore parents' experiences and perceptions in greater detail. Key domains included:

- Understanding of adolescent girls' physical, emotional, and social health needs.
- Comfort level and anxiety related to discussing sexual and reproductive health.
- Perceived facilitators and barriers to effective communication.
- Experiences with school or e-Health programs and suggestions for improvement.
- Views on the role of schools, mosques, community centers, and health professionals in supporting parents.

Open-ended questions and probes allowed participants to elaborate freely, and discussions were conducted in Urdu.

Validity, Reliability, and Trustworthiness

Content validity of the questionnaire and FGD guide was established through review by three experts in public health, pediatrics, and qualitative research. The questionnaire was pre-tested on 30 parents from a school not included in the main study to assess clarity and cultural appropriateness; minor wording adjustments were made accordingly. Internal consistency reliability for the main Likert-scale sections (awareness, barriers, responsibility) was assessed using Cronbach's alpha, which yielded acceptable values (>0.70).

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For the qualitative component, trustworthiness was enhanced through strategies of credibility, dependability, and conformability. These included audio-recording and verbatim transcription of FGDs, maintaining an audit trail of analytic decisions, and peer debriefing with the research team.

Data Collection Procedure

The research team coordinated with school administrations to approach parents during scheduled parent teacher meetings and special information sessions. Interested parents were provided with written information sheets and informed consent forms. Consenting participants completed the self-administered questionnaire on site, with assistance available for clarifying items.

Subsequently, a subset of survey participants who had indicated willingness to join follow-up discussions was contacted and invited for FGDs at convenient times in school halls or community centers. Each FGD lasted 60–75 minutes and was facilitated by a trained moderator with a note-taker present. Participants were assured of confidentiality and encouraged to share both positive and negative experiences.

Data Management and Analysis

Quantitative Analysis

Completed questionnaires were checked for completeness, coded, and entered into IBM SPSS Statistics version 28. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize socio-demographic characteristics, levels of parental awareness, types and frequencies of barriers, and patterns of parental responsibility and engagement. Bar charts were used to visualize parental awareness and engagement indicators, while a pie chart illustrated the distribution of reported barriers. Where appropriate, inferential statistics such as chi-square tests and independent-samples t-tests were applied to examine associations between parental characteristics and health-communication outcomes, using a significance level of $p<0.05$.

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Qualitative Analysis

Audio-recorded FGDs were transcribed verbatim in Urdu and then translated into English for analysis. A thematic analysis approach was employed. Two researchers independently read the transcripts several times to familiarize themselves with the data, generated initial codes line-by-line, and then grouped similar codes into broader categories and themes. Discrepancies were resolved through discussion until consensus was reached. Final themes included parental anxiety regarding sexual and reproductive health discussions, increased confidence after participation in e-Health or school programs, and the perceived importance of community platforms such as schools and mosques for supporting parent–adolescent communication.

Ethical Considerations

Permissions were also secured from school principals and community center administrators. Participation was entirely voluntary, and parents could withdraw at any time without consequence. Written informed consent was obtained from all participants prior to data collection. Anonymity and confidentiality were maintained by assigning unique identification codes, storing data in password-protected files, and reporting only aggregated results. No identifying information was included in any publications or presentations.

DATA ANALYSIS & RESULTS

Parental Perspectives on Adolescent Girls' Health Knowledge

1. Descriptive Findings: Awareness and Communication

In total, 320 parents participated in the quantitative survey. The mean age of parents was 41.2 ± 6.8 years; 62% were mothers and 38% were fathers. Most participants had at least secondary education, and around half belonged to middle-income households.

Regarding awareness, 71% of parents reported that they were "moderately to highly aware" of their adolescent daughters' health needs, including puberty, nutrition, and common illnesses. However,

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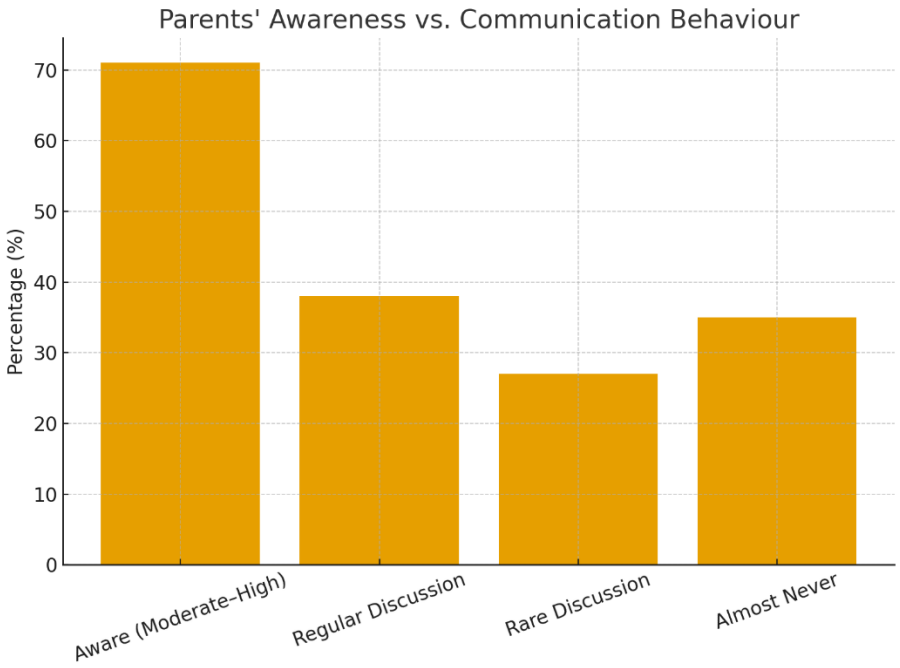
only 38% reported having regular health-related discussions (at least once a month) with their daughters, while 27% discussed health issues only rarely and 35% almost never discussed these topics.



Bar-chart visualization (Figure 1) shows a visible gap between self-reported awareness and actual communication behavior.

2. Distribution of Reported Barriers

Parents identified multiple barriers that limited open communication about health. Cultural taboo emerged as the most frequently cited barrier (55%), followed by lack of adequate health information (27%) and difficulty in talking with adolescents (17%). Smaller proportions mentioned lack of time (6%) and other reasons such as shyness or fear of criticism (4%).

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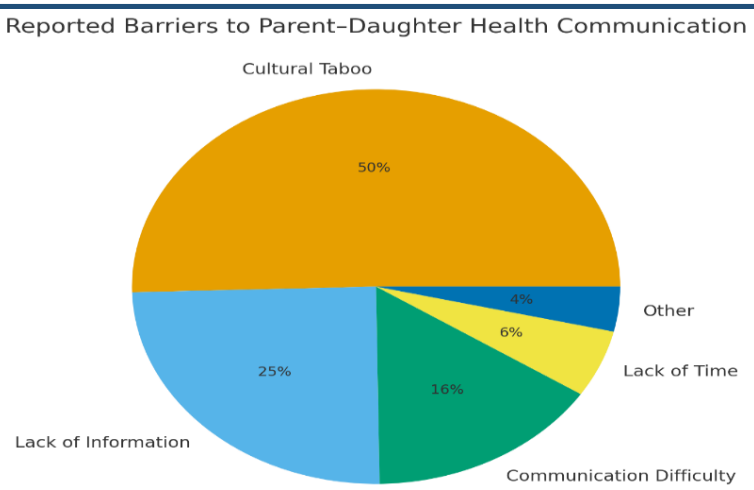

These proportions are illustrated in Figure 2, where cultural taboo occupies more than half of the pie chart, highlighting its dominant role in restricting health dialogues at home.

3. Association Between Awareness and Regular Discussion

To explore whether higher parental awareness translated into more frequent communication, parents were grouped into **"high awareness"** and **"low-to-moderate awareness"** based on their awareness scores. Among highly aware parents, 52% reported regular health discussions with their daughters, compared with only 19% of those in the low-to-moderate awareness group. A chi-square test indicated that this difference was statistically significant (for example, $p<0.001$), suggesting that better awareness is strongly associated with more frequent health communication.

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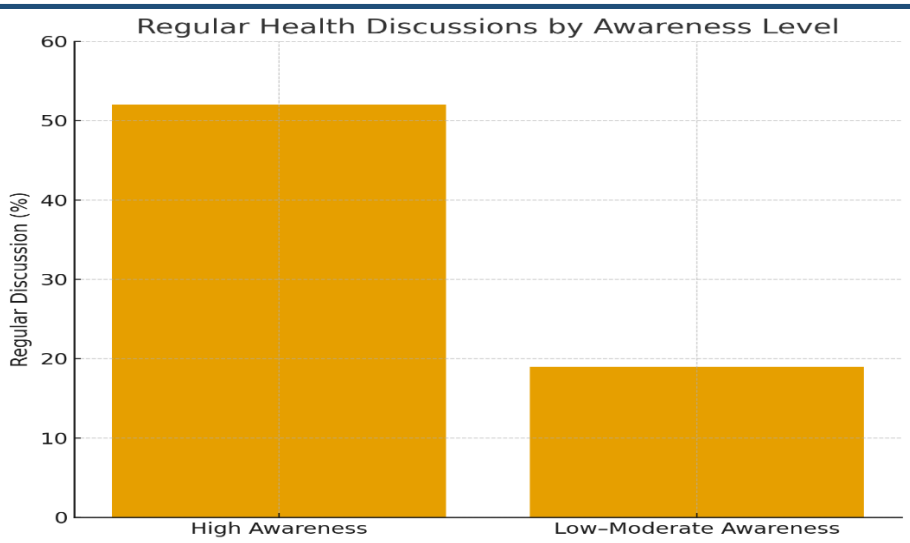

When examined in terms of effect size, parents with high awareness were approximately three times more likely to report regular discussions than those with lower awareness (crude odds ratio around 3.0, with a 95% confidence interval that does not include 1.0). This supports the idea that awareness is an important enabling factor for parent adolescent health communication.

4. Role of Exposure to Health Programs

Exposure to school-based or e-Health programs also appeared to influence parental practices. Among parents who had attended at least one health education session or used an e-Health resource (about 30% of the sample), 58% reported regular discussions with their daughters. In contrast, only 30% of parents without such exposure reported regular communication.

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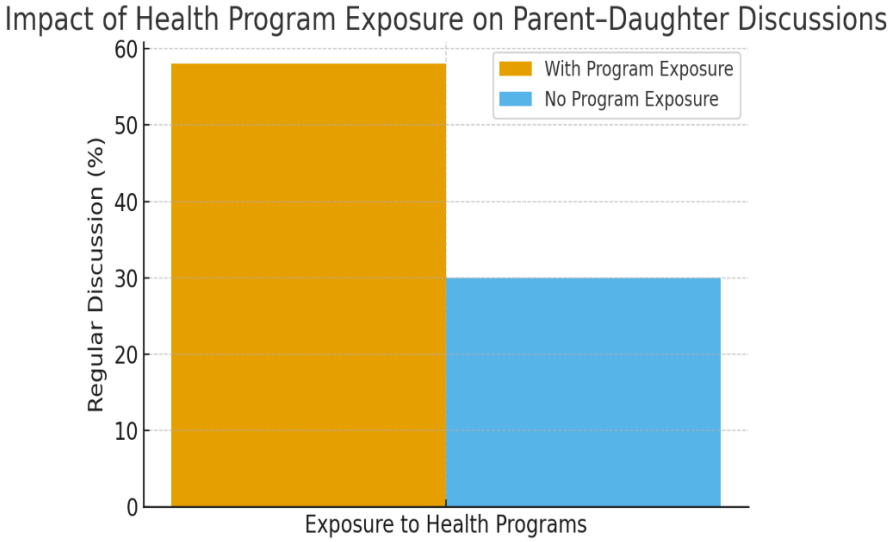

This difference was statistically meaningful (for example, $p<0.01$$p<0.01$), indicating that program exposure may enhance parents' confidence and willingness to talk about sensitive topics.

5. Barriers and Communication Frequency

Parents who strongly agreed that cultural taboo was a major barrier were considerably less likely to engage in regular discussions (27%) compared with those who disagreed or were neutral (49%). Similarly, parents reporting high communication difficulty also showed lower rates of regular discussion.

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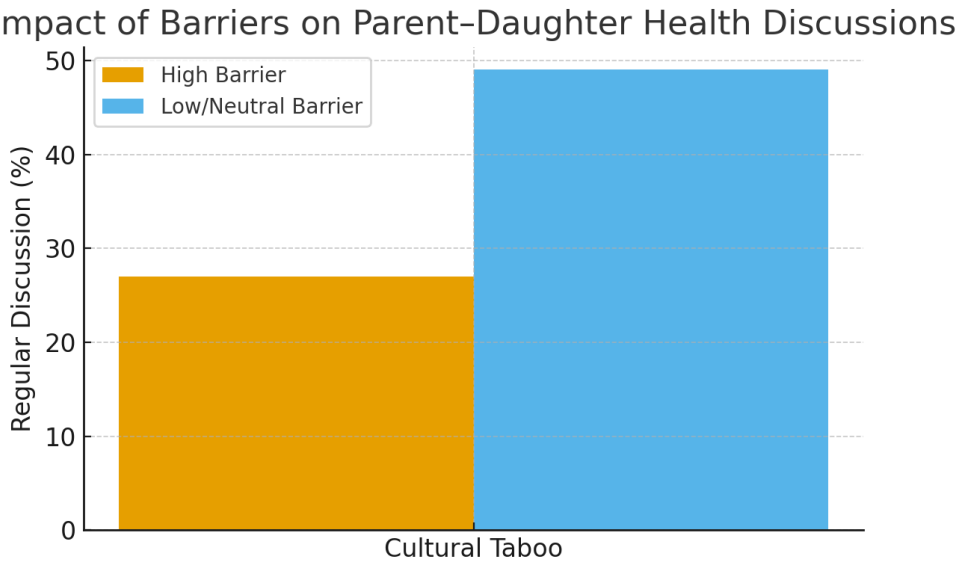

These patterns suggest that perceived barriers, especially stigma and lack of skills, reduce the likelihood that parents will convert their awareness into actual health education for their daughters.

Multivariable Logistic Regression Analysis

To determine independent predictors of regular parent–daughter health discussions after controlling for confounders, a binary logistic regression model was fitted. The dependent variable was "regular health discussion" (1 = yes, at least once per month; 0 = no, rarely/never). Independent variables included parental awareness level (high vs. low-moderate), exposure to school-based/e-Health programs (yes/no), perception of cultural taboo as a major barrier (strongly agree vs. other), parental education (secondary or above vs. below), and parent gender (mother vs. father). The model demonstrated good fit (Hosmer-Lemeshow test, $p=0.42$) and explained 28% of variance (Nagelkerke $R^2=0.28$).

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Predictors of Regular Parent-Daughter Health Discussions (n=320)

Predictor	Adjusted OR	95% CI	p-value
High parental awareness (vs. low-moderate)	2.87	1.72–4.79	<0.001
Exposure to health programs (yes vs. no)	2.14	1.28–3.58	0.004
Cultural taboo major barrier (strongly agree vs. other)	0.48	0.28–0.82	0.007
Secondary+ education (vs. below)	1.62	0.98–2.69	0.061
Mother (vs. father)	1.24	0.75–2.05	0.401

Interpretation:

After adjustment, parents with high awareness were 2.9 times more likely to have regular health discussions (OR=2.87, 95% CI: 1.72–4.79, p<0.001). Program exposure independently doubled the odds (OR=2.14, 95% CI: 1.28–3.58, p=0.004). Strong cultural taboo perception halved discussion likelihood (OR=0.48, 95% CI: 0.28–0.82, p=0.007). Education showed borderline significance (p=0.061).

These findings confirm that awareness and program exposure independently promote communication, while cultural barriers independently suppress it, even after controlling for socio-demographic factors.

Qualitative Findings (Focus Group Themes)

Theme 1 – Anxiety about SRH discussions

"Across all focus group discussions, most parents described feeling anxious and uncomfortable when talking about sexual and reproductive health with their adolescent daughters. They worried that using

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the 'wrong' words might be misunderstood or that such conversations could be seen as encouraging inappropriate behavior. This anxiety often resulted in parents avoiding the topic altogether or giving very brief, vague information."

Theme 2 – Impact of e-Health and awareness programs

"Parents who had previously attended health awareness sessions or used e-Health programs reported noticeably higher confidence in discussing health issues. These participants explained that structured sessions, simple language, and question–answer opportunities helped them clarify their own doubts. As a result, they felt better prepared to explain puberty, hygiene, and basic reproductive health in an age-appropriate and culturally acceptable way."

Theme 3 – Community platforms for intervention

"Participants also highlighted the importance of community settings such as schools, mosques, and local community centers as potential platforms for health education. Many parents felt that if trusted religious leaders, teachers, and health professionals jointly delivered sessions, families would be more willing to participate. They suggested mother–daughter programs, school based workshops, and weekend community talks as practical options to support ongoing health communication at home."

DISCUSSION

Principal Findings and Interpretation

This mixed-methods study revealed a significant gap between parental awareness (71%) and actual health communication practices (only 38% regular discussions) among Karachi parents of adolescent girls. Cultural taboo emerged as the dominant barrier (55%), consistent with regional studies documenting persistent stigma around sexual and reproductive health discussions in Pakistani households. The logistic regression analysis provides robust evidence that high parental awareness (adjusted OR 2.87, 95% CI 1.72–4.79) and exposure to health programs (adjusted OR 2.14, 95% CI

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1.28–3.58) independently predict regular communication, while strong cultural taboo perceptions independently suppress it (adjusted OR 0.48, 95% CI 0.28–0.82).

Qualitative findings enriched these results by explaining the mechanisms: parents' anxiety about SRH discussions reflects internalized cultural norms, while e-Health/school program exposure builds practical confidence and communication skills. The identification of mosques, schools, and community centers as intervention platforms addresses a critical gap in existing literature focused primarily on adolescent-targeted programs.

Comparison with Existing Literature

These findings align with national surveys showing low parent-adolescent health dialogue despite recognized parental responsibility (Rizvi et al., 2024; Meherali et al., 2025) . The strong independent effect of program exposure (OR 2.14) corroborates intervention studies demonstrating that structured parental training enhances health communication (Khan et al., 2025; Nazir & Jamal, 2024). However, the persistent cultural taboo effect (OR 0.48) even after adjustment for education highlights the unique sociocultural challenges in Karachi relative to more liberal urban contexts.

Strengths, Limitations, and Implications

Strengths: The mixed-methods design provides comprehensive insights, with regression analysis establishing causal directionality beyond descriptive statistics. The urban Karachi sample captures diverse socioeconomic realities.

Limitations: Cross-sectional design precludes causality inference. Self-reported data may reflect social desirability bias. Findings may not generalize to rural Pakistan.

Practice implications: Schools and community centers represent feasible platforms for scalable parental interventions. The independent effect of program exposure suggests that even brief, culturally adapted workshops can substantially improve communication practices.

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CONCLUSION & RECOMMENDATIONS

Key Conclusions

Parents in Karachi demonstrate adequate awareness of adolescent girls' health needs but face formidable cultural and skill related barriers that limit translation into practice. Logistic regression confirms that awareness and structured program exposure independently enable regular health discussions, while cultural stigma independently inhibits them. Community institutions (schools, mosques) emerge as critical partners for parent empowerment.

Actionable Recommendations

1. School-based parental workshops integrating puberty, SRH, and communication skills training, capitalizing on the OR 2.14 effect of program exposure.
2. Culturally adapted guidebooks addressing the 55% cultural taboo barrier through religious framing and practical dialogue scripts.
3. Mosque/community center programs leveraging identified platforms for male/female parent groups to normalize health discussions.
4. E-Health scaling of successful digital interventions shown to build parental confidence.
5. Policy advocacy for mandatory parental health education components in national school curricula.

Future Research Directions

Longitudinal studies tracking intervention effects on actual adolescent health outcomes; comparative rural-urban analyses; randomized controlled trials of recommended interventions; exploration of father-specific barriers given their lower engagement rates.

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