

Impact of a Counseling-Based Intervention Program on Enhancing Adolescents' Awareness and Risk Perception Toward Consanguineous Marriage at Kafr El-Sheikh, and El-Gharbia Governorates, Egypt

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Abstract

Background: Consanguineous marriages increase the risk of genetic disorders and congenital anomalies in offspring due to the higher likelihood of inheriting identical recessive genes from both parents. **This study aimed** to evaluate the impact of a counseling-based intervention program on enhancing adolescents' awareness and risk perception toward consanguineous marriage in Kafr El-Sheikh, and El-Gharbia Governorates, Egypt. **Setting:** The study was conducted at the faculties of nursing in Kafr El-Sheikh and El-Gharbia Governorates, Egypt. **Sample:** The subjects of the present study comprised 200 newly admitted adolescent students who were divided into 2 equal groups that consisted of 100 adolescents of both sexes for each group. **Four tools for data collection: Tool I:** consisted of two parts, part I: included socio-demographic characteristics, and part II: Adolescent students' knowledge about consanguineous marriage, **Tools II:** Adolescent students' attitudes toward the consanguineous marriage. **Tools III:** Risk perception of adolescent students according to the Health Belief Model (HBM). **Tool IV:** Adolescent students' satisfaction regarding counseling-based intervention program. **Results:** The study findings revealed that after implementation of counseling-based intervention program, the proportion of participants with good knowledge increased from 8.0% and 7.0% to 90.0% and 92.0%, respectively ($p < 0.001$). Positive attitudes rose from 13% to 94%, while misconceptions and negative beliefs markedly declined ($p < 0.05$). Risk perception improved substantially, with high perception increasing from 5% and 3% to 91% and 94% ($p < 0.001$). Additionally, 95% and 94% of adolescents expressed satisfaction with the program. **Conclusion:** It can be concluded that the counseling-based intervention program regarding consanguineous marriage significantly enhanced adolescents' awareness, corrected misconceptions, improved attitudes, increased risk perception, and achieved high satisfaction levels. **Recommendations:** continuous health educational campaigns should be carried out for adolescents in preparatory and secondary schools as well as universities to fill the gaps in their risk perception regarding consanguineous marriage.

Keywords: Adolescents, Consanguineous marriage, and Risk perception.

Introduction:

Consanguineous is derived from Latin roots, where “con” signifies “together” and “sanguineous” means “blood,” referring to individuals who are biologically related through a shared ancestor. Consanguineous marriages are commonly practiced in traditional societies that value preserving family heritage, wealth, and social cohesion. Within Arab cultures, the most prevalent form of such unions is between first cousins. (Jameel, et al., 2024). From a genetic standpoint, consanguinity describes marriages between individuals who have at least one common ancestor. These types of unions are frequently observed in closely connected populations, such as small rural communities,

tribes, or groups that follow endogamous marriage traditions, where couples are selected from within the same family, clan, or community, (Çevik, Özkan, & Kaya, 2025). **Just** Consanguineous marriages are traditionally prevalent in the Eastern Mediterranean and South Asian regions, particularly among Muslim populations. While such unions are uncommon in most Western countries, higher rates are observed among immigrant communities or Muslim populations residing there. (El Goundali, Chebabe, Laamiri, & Hilali, 2022). In many Arab countries, consanguineous marriage remains widespread, with reported rates of 65% in Sudan, 57.7% in Saudi Arabia, 52.0% in Qatar, 51.3% in Jordan, 50.5% in the United Arab Emirates, 50.0% in both Iraq and Oman, 49%

in Tunisia, 40% in Egypt, 40% in Yemen, and 36% in Kuwait, **(Popescu, et al., 2025)**.

In populations where consanguineous marriages are prevalent, recessive genetic disorders are more frequently observed as a significant reproductive health concern. Inbreeding increases homozygosity, which in turn raises the risk of early-onset illnesses and mortality among offspring. Genetic disorders and congenital anomalies affect an estimated 2%–5% of all live births, contributing to up to 30% of pediatric hospital admissions and accounting for approximately 50% of childhood deaths in developing countries, **(Popescu, et al., 2025)**.

These conditions represent the leading cause of infant mortality in the United Arab Emirates and the second leading cause in Bahrain, Kuwait, Oman, and Qatar. In Saudi Arabia, congenital malformations were responsible for 25%–35% of perinatal deaths in studies conducted at two hospitals, **(Anwar, Mourosi, Arafat, & Hosen, 2020)**.

Consanguineous marriage, or marriage between close relatives, is associated with a range of genetic, health, and psychosocial complications. Genetically, such unions increase homozygosity, raising the likelihood of offspring inheriting identical recessive genes from both parents, which can result in autosomal recessive disorders, congenital anomalies, cognitive impairments, heart defects, hearing problems, and certain rare genetic diseases, **(Abbas, et al., 2022)**. Health-wise, children born from these marriages are at higher risk for birth defects, developmental delays, and chronic conditions such as diabetes, hypertension, and some cancers. Socially and psychologically, families may face stigma or discrimination, and parents may experience emotional stress and anxiety due to potential health issues in their children. These factors highlight the importance of education, counseling, and preventive strategies to mitigate the risks associated with consanguineous marriages, **(Oniya, Neves, Ahmed, & Konje, 2019)**.

Mitigation strategies for the risks associated with consanguineous marriages include providing genetic counseling, raising public awareness, and improving education. Genetic counseling helps couples understand potential genetic risks and make informed reproductive decisions. Public awareness campaigns can educate communities about the health

implications of consanguineous unions, potentially reducing their prevalence, **(Onyemelukwe, & NnennaMbanefo, 2024)**. Additionally, enhancing education and socioeconomic conditions empowers individuals to make informed choices regarding marriage. Understanding these risks is essential for healthcare providers, policymakers, and communities to implement effective strategies aimed at minimizing the genetic, health, and social consequences of consanguineous marriages, **(Popescu, et al., 2025)**.

Studies investigating the impact of consanguinity on reproductive health in Arab countries are limited and show varying levels of quality. Congenital defects are often linked to recurrent miscarriages, preterm deliveries, stillbirths, and obstructed labor. A recent study from Lebanon involving 120 infertile men revealed a positive association between consanguinity and male infertility, underscoring the role of recessive genetic factors, **(Cheffi, Dahbi, Habbibeddine, & Hilali, 2025)**. Risk perception involves adolescents' attitudes, beliefs, intuitive evaluations, and psychological responses to particular risks, shaped by individual cognition and sociocultural influences. Originally derived from social psychology, the concept has been later incorporated into frameworks for risk management and communication, **(Alauddin, 2025)**.

The Health Belief Model (HBM) provides a valuable framework for understanding adolescents' risk perceptions and decision-making regarding consanguineous marriage. Each component of the model, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy plays a critical role in shaping attitudes and behaviors, **(Cheffi, Dahbi, & Habbibeddine, 2025)**. HBM, provide the participant with greater awareness of their **susceptibility** to genetic risks resulting from consanguineous unions and recognized the **severity** of potential hereditary disorders, **(Rahma, et al., 2025)**. They also acknowledged the **benefits** of avoiding consanguineous marriage, such as healthier offspring and reduced family burden, while perceiving fewer **barriers** to opposing such traditions within their communities. Moreover, **self-efficacy** can be reflected in their confidence to advocate against

consanguineous marriage and influence peers and relatives, (Almazrouei, et al., 2025).

Significance of the Study:

Consanguineous marriage has numerous challenges at both the global and regional levels. Consanguineous marriage leads to many problems. The percentage of complications in consanguineous marriages can vary, but studies have shown that children from these unions are twice as likely to have genetic disorders compared to children from non-related couples. Specifically, about 6.2% of live children from consanguineous couples' experience health complications that may be genetically predisposed, (Aljabri, et al., 2025). In Egypt, consanguineous marriages are quite common, with about 35.3% of all marriages being consanguineous, especially among first cousins. The rate is higher in rural areas, reaching up to 59.9%. In the world, 10 million adolescents' consanguineous marriages under the age of 18 marry each year is around 833,333 a month 192,307 a week 27,397 a day 19 every minute or, around one adolescent every three seconds. This study is essential for improving the overall health and well-being of communities where consanguineous marriages are prevalent by fostering informed decision-making among the younger generation especially adolescent nursing students who will be the future health care providers offering counselling services such as premarital counselling regarding, (Popescu, et al., 2025).

The aim of this study

was to evaluate the impact of a counseling-based intervention program on enhancing adolescents' awareness and risk perception toward consanguineous marriage at Kafr El-Sheikh, and El-Gharbia Governorates, Egypt.

Research hypotheses:

H₁: Adolescent students are anticipated to show a significant enhancement in their awareness about consanguineous marriage following the implementation of the counseling intervention program.

H₂: Adolescent students are expected to exhibit a notable positive change in their attitudes toward consanguineous marriage after the implementation of the counseling intervention program.

H₃: The counseling intervention program is expected to significantly improve adolescent students' risk perception toward consanguineous marriage.

H₄: Adolescent students are likely to report higher levels of satisfaction after engaging in the counseling intervention program regarding consanguineous marriage.

Operational definitions:

A Counseling-Based Intervention Program refers to a planned series of counseling sessions provided to adolescent students with the purpose of improving their knowledge, attitude, and risk perception toward consanguineous marriage.

Adolescent students' awareness denotes their knowledge of the concept, causes, potential genetic and social risks, and the long-term health implications of **consanguineous marriage**.

Adolescent students' risk perception refers to adolescents' recognition interpret, and evaluate the potential dangers and negative consequences toward **consanguineous marriage** **Health Belief Model:** In the context of **consanguineous marriage**, the HBM is utilized to assess how adolescents perceive the risk of genetic disorders and reproductive complications resulting from marrying close relatives.

Subjects and Method

Study design: A quasi experimental research design was used to achieve the aim of the present study. A **quasi-experimental research design (one group pre/post-test)** was utilized to assess the impact of a counseling-based intervention program on enhancing adolescents' awareness and risk perception toward consanguineous marriage. This design was chosen to measure changes in students' knowledge, attitude, risk perception and satisfaction regarding consanguineous marriage.

The study setting:

The study was conducted at the **Faculties of Nursing** in both **Kafr El-Sheikh University (Kafr El-Sheikh Governorate)** and **Tanta University (El-Gharbia Governorate)**, Egypt. These two settings were selected to represent students from different geographical and sociocultural backgrounds, where consanguineous marriage remains a traditional practice in many families. The Faculty of Nursing, Tanta University, received quality accreditation from the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) on July 15, 2019 while Faculty of Nursing Kafr El-Sheikh University

achieved quality accreditation from the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) on October 30, 2025.

Subjects:

The subjects of the present study comprised 200 newly admitted adolescent students from the total number of students (1950) 1000 students from Faculty of Nursing, Kafr Elsheikh University, Kafr Elsheikh Governorate as well as 995 students from Faculty of Nursing, Tanta University, El-Gharbia Governorate. They were separated into two equal groups, each comprising 100 adolescents of both genders. Students in the first year during the first and second semesters of the academic year 2024-2025 who didn't receive any educational programs about the risk of consanguineous marriage in their previous curricula.

Sample Size:

The total sample consisted of (200) students. The sample size was estimated using power analysis with a confidence level of 95%, a study power of 80%, and an expected effect size of 0.5 to detect significant differences between pre- and post-intervention mean scores.

Sampling Technique:

A **Purposive sampling** technique was used to select participants from the student enrollment lists. Students were proportionally allocated between the two faculties based on their total number. The **inclusion criteria included** adolescent students aged 18–20 years, enrolled in the first academic year at the Faculty of Nursing and willing to participate and provide informed consent while the **exclusion criteria were** students who had previously attended lectures or awareness sessions about consanguineous marriage and those absent during data collection or follow-up assessments.

Tools of data collection: The researchers created and employed a structured interview schedule to gather the required data, utilizing three specific tools.

Tool I: A structural interviewing questionnaire: This tool was developed by the researchers based on review of recent literature (Abd Eltawab, Eldesokey, Mostafa, & Morad, 2025; AL-asfar, Hassan, & Saleh, 2024; Alauddin, 2025).

It is divided into two parts

Part I: Socio-demographic characteristics: Students' demographic characteristics included age, adolescents living with their parents, and consanguinity between parents.

Part II: Adolescents' knowledge about consanguineous marriage: was designed to evaluate students' knowledge about consanguineous marriage. It consisted of **10** open ended **questions** divided into **three main sections**.

The first section addressed the concept of consanguineous marriage, its degrees, contributing factors to its prevalence, and its consequences.

The second section focused on genetic disorders linked to consanguineous marriage, as well as the most common hereditary conditions.

The third section covered the importance of counseling-based intervention program, its component, along with premarital investigations for both males and females, as well as specific examinations related to consanguineous marriage.

Scoring system:

A system was designed to evaluate the knowledge of adolescent students. Points were allocated for each question according to the accuracy and completeness of the answers. A correct and complete responses scored two point, correct but incomplete responses scored one point while incorrect responses or don't know answer scored zero. The total possible score for all knowledge-related questions was 20 marks, representing 100%.

Total knowledge scores:

- **High:** $\geq 70\%$ of the overall score (≥ 14 marks)
- **Moderate:** $50 - < 70\%$ (10- < 14 marks).
- **Low:** $< 50\%$ of the total (< 10 marks)

Tools II: Adolescent attitudes regarding consanguineous marriage: was adapted by the researchers from (Almazrouei, et al., 2025&Alotaibi, et al., 2022) to assess students' **attitudes toward consanguineous marriage**. It included **10 well-structured statements** representing a range of beliefs and viewpoints. These statements such as (helps in the continuation of marital life, strengthens family ties, consanguineous makes couples know each other and everything is clear before marriage, consanguinity is less costly than non-consanguinity (reducing marriage

expenses), preserving cultural traditions, consanguine causes problems between families, customs and traditions encourage consanguinity, increase the potential for congenital anomalies (maternal and neonatal risks), advising consanguineous marriage to your friends and neighbors, as well as preference of consanguineous marriage. Participants expressed their opinions using a **three-point Likert scale**: agree, uncertain, or disagree.

The total score level of students' attitude:

Each statement was rated on a three-point scale: disagree = 1 point, uncertain = 2 points, and agree = 3 points. The total attitudes score therefore ranged from **10 to 30 points**. Scores below **60% (1–18)** were considered indicative of negative attitudes, whereas scores above **60% (19–30)** reflected a positive attitudes toward consanguineous marriage.

Tool III: Risk perception of adolescent students according to the Health Belief Model (HBM) regarding consanguineous marriage: It adapted by the researcher from (Cheffi, Dahbi, Habbibeddine, & Hilali, 2025; Jairoun, et al., 2024) and included the following items.

(A) Perceived Susceptibility (Personal and Familial Risk Awareness). It included 5 items as: (I believe that marrying a close relative increases the chance of having children with hereditary diseases, I feel that consanguineous marriage can affect my own future children's health, I may personally be at risk of facing problems if I marry a relative, genetic diseases can occur in my family if close relatives continue to marry each other, even if there are no diseases now, and finally consanguineous marriages in my family may cause problems in future generations).

(B) Perceived Severity (Seriousness of the Consequences). It included 5 items as: (Genetic disorders caused by consanguineous marriage can lead to lifelong disabilities in children, having a child with a genetic disorder would seriously affect the emotional wellbeing of the family, families with inherited diseases face significant financial and psychological burdens, the consequences of consanguineous marriage can be as serious as losing a child's normal life and children born from consanguineous marriages may suffer from severe health and social problems).

(C) Perceived benefits (advantages of avoiding consanguineous marriage). It

included 5 items as: (Avoiding marriage between relatives helps prevent hereditary diseases, premarital genetic counseling can protect future children's health, educating young people about consanguineous marriage can reduce the occurrence of genetic disorders, seeking medical advice before marriage is important for family health, and awareness programs can help people make informed decisions about marriage).

(D) Perceived Barriers (social and cultural obstacles). It included 5 items as: (Family traditions make it difficult to refuse marriage to a relative, people in my community believe consanguineous marriage strengthens family ties, discussing genetic risks before marriage may be considered culturally inappropriate, fear of social criticism prevents many from avoiding consanguineous marriage, and religious or cultural beliefs sometimes discourage premarital genetic testing).

(E) Cues to Action (triggers or motivators for behavior change). It included 5 items as: (Learning about real cases of genetic disorders would make me reconsider marrying a relative, counseling sessions or awareness campaigns motivate me to avoid consanguineous marriage, if my family understood the risks, they would support my decision consanguineous marriage, seeing other families suffer from hereditary diseases would influence my consanguineous marriage choice, and advice from health professionals would encourage me to undergo premarital screening).

Scoring System: Each item is scored in a 5 point Likert scale ranging from **1 (Strongly Disagree)** to **5 (Strongly Agree)**. Reverse-score negative statements if applicable (e.g., items expressing cultural acceptance without risk awareness). Total perception score = sum of all items (range 25–125).

○ **Low risk perception:** <50% (25-62.5)

○ **Moderate risk perception:** 50–74% (63- 92.5)

○ **High risk perception:** ≥75% (93-125)

Tool IV: Adolescent Students Satisfaction regarding Counseling Based Intervention Program: This tool was adapted by the researchers from (Aşkan, & Çelik, 2025; Smary, Metwally, El-madawye, & Hassneen, 2025) to evaluate students' satisfaction with the counseling sessions. The tool consisted of 7 items covering aspects such as the importance of the counseling sessions,

adequacy of the venue and ventilation, appropriateness of session duration, relevance of the instructional guidelines to the stated objectives, clarity and comprehensibility of the content, advancement of knowledge gained, and clarity of the counselor's teaching methods and instructional media. Each student nurse rated her level of satisfaction using three response options: Satisfied, uncertainly satisfied, and unsatisfied.

Satisfaction Scoring System:

Each statement was assigned three levels of scoring: unsatisfied = 1 point, uncertainly satisfied = 2 points, and satisfied = 3 points. The total satisfaction score ranged from 7 to 21. Scores between 1–7 (**less than 50%**) indicated **dissatisfaction**, scores from 8–14 (**50%–70%**) reflected **moderate or uncertain satisfaction**, and scores from 15–21 (**more than 70%**) denoted **high satisfaction** with the counseling sessions.

Method

Administrative Approval: An official written approval letter outlining the purpose of the study was obtained from the **Dean of the Faculty of Nursing, Kafr El-Sheik University, Kafr El-Sheikh Governorate and Tanta University, El-Gharbia Governorate, Egypt** prior to data collection to secure permission for data collection and implementation of the study.

Ethical considerations: Official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee of Faculty of Nursing, Kafr El Sheikh University (**Code:** KFSIRB200-786). Participants were fully informed about the study and their role before they signed the consent form. They were assured that participation was voluntary and they could withdraw at any time. The participants were given assurance of the confidentiality of the information, ensuring that it would not be accessed by any other entity without their permission. Respect was given to ethics, values, culture, and beliefs.

Pilot study: A pilot study was conducted to evaluate the clarity, applicability, and comprehensibility of the instrument. This study involved a sample of 10% (20) adolescent students. Since no major changes were necessary, the pilot participants were included in the main sample size.

Tools Validity: The study tools were evaluated for content validity by a panel of five

experts specializing in Maternal and Neonatal Health Nursing. The experts reviewed all items for **clarity, relevance, comprehensiveness, and alignment with the study objectives**. Based on their constructive feedback, the necessary modifications were applied to ensure greater **accuracy, clarity, and validity** of the instruments.

Tools Reliability: The study instrument's reliability coefficient was determined using Cronbach's Alpha. The findings were as follow:

Tools Used		Cronbach's Alpha Findings
Adolescent Knowledge	Students	0.76
Adolescent Attitude	Students	0.88
Adolescent Students Risk Perception according to HBM		0.89
Adolescent Satisfaction	Students	0.90

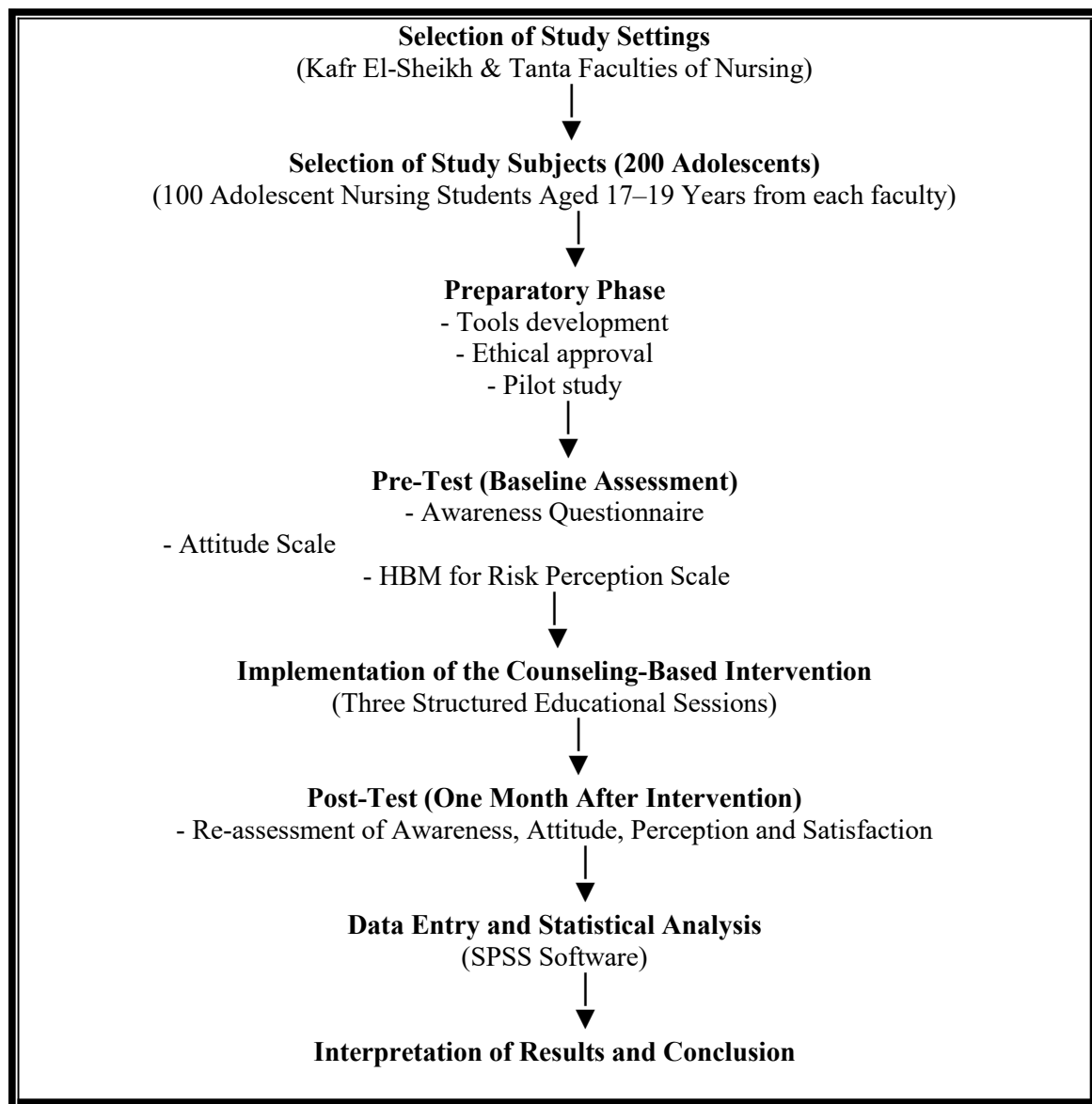


Figure (1): Methodology Flowchart (Consort Model)

Fieldwork:

Data collection for the present study was conducted through the first and second semesters of the academic year (2024-2025), at the Faculty of Nursing, Kafr El-Sheikh University, Kafr El-Sheikh Governorate and Tanta University, El-Gharbia Governorate, Egypt. The current study was implemented in Four sequential phases, namely the assessment, planning, implementation, and evaluation phases. Each phase was carried out

systematically to ensure accuracy, consistency, and the achievement of the study objectives.

Assessment Phase

This phase represented the foundation upon which the study was built. It involved all preliminary activities necessary for developing the research tools and ensuring that the study design was scientifically sound and practically feasible.

At the beginning, the researchers performed an extensive and critical review of both

national and international literature pertinent to consanguineous marriage, its socio-cultural determinants, and its genetic and health-related consequences. This review included textbooks, peer-reviewed journals, academic dissertations, and reports published by global health organizations. The purpose of this review was to gain comprehensive insight into the problem, identify knowledge gaps, and develop a **theoretically and empirically grounded framework** for the study.

Based on the gathered evidence, the researchers designed the **data collection instruments**, including the students' knowledge questionnaire, attitude scale, risk perception tool, and satisfaction checklist. These tools were drafted in clear and simple Arabic to suit the comprehension level of adolescent nursing students.

Before data collection commenced, the researcher **visited the designated faculties of nursing** in both **Kafr El-Sheikh** and **El-Gharbia Governorates** to introduce the study to faculty administrators and staff members. The purpose, procedures, and significance of the research were thoroughly explained to obtain their cooperation and facilitate access to the student population.

At the onset, the researchers met the students in small groups within their regular class settings. Then began by creating a friendly and open environment to encourage participation and reduce any feelings of hesitation or anxiety. Each student received detailed instructions on how to complete the pretest questionnaire. The researcher clarified the meaning of every item and provided examples when necessary to ensure accurate understanding. Completion of the pretest took approximately **30 minutes** per group.

Subsequently, **verbal informed consent** was obtained from each participating student after clarifying the study objectives, ensuring voluntary participation, and emphasizing the confidentiality and anonymity of their responses. The researchers also reassured the students that the data collected would be used solely for scientific research purposes and that their participation would have no influence on their academic standing or grades.

The **pre-assessment questionnaire** was used to establish a baseline measure of students' knowledge and attitudes regarding consanguineous marriage before any intervention was introduced. This helped

identify their initial misconceptions and information gaps, which guided the design and focus of the counseling sessions.

Planning Phase:

Based on the data collected using a structured interview questionnaire to the impact of a counseling-based intervention program on enhancing adolescents' awareness and risk perception toward consanguineous marriage at Kafr El-Sheikh, and El-Gharbia Governorates, Egypt.". Appropriate counselling based intervention sessions were prepared, planned, and implemented by the researcher for the studied students. The steps of planning for the counselling based intervention program included the following:

a-Setting the goals and objectives of the counselling based intervention program:

*** The goal of the counselling based intervention program was to:**

- Enhance adolescent students' awareness, attitudes, risk perception and satisfaction regarding consanguineous marriage.

*** Objectives of counselling based intervention program:** After implementation of the counselling based intervention program the adolescent students were able to:

- Identify the concept of consanguineous marriage, its degrees, contributing factors to its prevalence, and associated risks.
- Enumerate the genetic disorders linked to consanguineous marriage, including the relationship between genetic diseases and relationship unions, as well as the most common hereditary conditions.
- Illustrate the importance of counseling-based intervention program, along with premarital investigations for both males and females, as well as specific examinations related to consanguineous marriage.

Implementation Phase

This phase encompassed the practical execution of research intervention. It extended over a **six-month period**, during which the researcher attended the study settings **three days per week (Saturday, Tuesday and Thursday)** to collect data, conduct, counseling-based intervention sessions, and follow up with participants.

Counseling Sessions

The counseling-based intervention program consisted of **three structured educational sessions**, delivered over a span of several weeks (the total number of students in each

faculty (100 students) was classified into four groups, each one consisting of 25 students. Each group completed the counselling-based intervention session in three weeks. Additionally, each session was organized systematically to progressively enhance students' awareness, correct misconceptions, and foster positive attitudes toward consanguineous marriage.

First Counseling Session:

The initial session aimed at introducing the concept of consanguineous marriage, its definitions, various degrees of relation (first, second cousins, etc.), and the social and cultural motives for its continuation. The session also discussed the prevalence of consanguinity in Egypt and the potential implications for family health. Students were encouraged to express their personal opinions and cultural beliefs regarding this consanguineous marriage, allowing the researchers to identify prevailing myths and misunderstandings.

Second Counseling Session:

This session concentrated on the **biological and genetic consequences** of consanguineous marriage. The researchers demonstrated how sharing genes with close relatives can increase the risk of genetic disorders, congenital anomalies, and chronic conditions. Common inherited diseases observed in consanguineous families were presented through illustrative examples.

Additionally, this session addressed **premarital counseling and medical investigations**, highlighting their importance for both males and females before marriage. The content was supported with an **Arabic instructional guideline** developed by the researchers, incorporating visual materials such as: charts, and handouts. Various teaching methods such as mini-lectures, brainstorming, small-group discussion, and question-answer techniques were employed to ensure active participation and retention of information.

Third Counseling Session:

The final session focused on the practical application of knowledge and the development of counseling and communication skills among the students. The researchers implemented **role-play scenarios**, where students simulated counseling situations between a health provider and a couple planning to marry. This interactive technique helped students apply theoretical knowledge to real-life contexts and

build confidence in discussing sensitive health topics.

At the conclusion of this session, the researcher summarized all key points, reinforced correct health beliefs, and answered students' questions to ensure complete comprehension.

Evaluation Phase

The evaluation phase aimed to determine the **effectiveness of the counseling intervention** and measure the enhancement of students' knowledge, attitudes, risk perception and satisfaction.

One month after the completion of the final session, the **same structured questionnaire** used in the pretest was re-administered to the participants as a **posttest**. This approach enabled the researchers to directly compare pre- and post-intervention results and assess the degree of change attributable to the program.

In addition, the **students' satisfaction questionnaire** was distributed to evaluate the participants' satisfaction regarding the relevance, clarity, and organization of the counseling sessions. The tool also assessed satisfaction with the venue, timing, teaching aids, and overall performance of the counselors. All completed questionnaires were collected, checked for completeness, and coded for statistical analysis. The researcher then expressed appreciation for the students' cooperation and provided brief feedback on the overall program outcomes.

Statistical Item: After data collection was completed, the data was entered and analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. A P value of less than 0.05 was considered significant. Descriptive statistics, including numbers, percentages, and mean standard deviation (SD), were utilized to describe the results. Appropriate inferential statistics, such as t-tests, were also applied. Consequently, the data was organized, analyzed, and tabulated.

Results:

Table (1): Shows that most adolescent students in both Kafr El-Sheikh and El-Gharbia governorates were under 20 years old, with mean ages of 19.79 ± 0.87 and 19.94 ± 1.14 years, respectively, and no significant age difference between two groups. The majority lived with both parents (86.0% and 91.0%), and around two-fifths reported parental

consanguinity (40.0% and 46.0%). All differences between the two groups were statistically insignificant, indicating that they were comparable and homogeneous in their socio-demographic characteristics.

Table (2): Illustrates a significant change of adolescents' knowledge of all items regarding consanguineous marriage post implementation of counselling intervention program in both Kafr El-Sheikh and El-Gharbia governorates compared to pre intervention.

Figure (1): Reveals a substantial enhancement in adolescents' knowledge about consanguineous marriage after the counseling-based intervention in both Kafr El-Sheikh and El-Gharbia governorates. Prior to the intervention, most students had low level of knowledge (41.0% and 44.0%), and only a small proportion demonstrated high level of knowledge (8.0% and 7.0%). After the program, knowledge levels increased markedly, with 90.0% among Kafr El-Sheikh students and 92.0% among El-Gharbia students attaining high knowledge scores, indicating the intervention's strong positive impact.

Table (3): Clarifies a significant positive shift in adolescents' attitudes toward consanguineous marriage after the counseling intervention in both Kafr El-Sheikh and El-Gharbia governorates. After counselling based intervention, most participants rejected common misconceptions, with 94% and 93% disagreeing that consanguinity helps in the continuation of marital life, 90% and 91% rejecting that consanguinity strengthens family ties, and 94% and 95% denying that consanguinity is less costly than consanguinity. Furthermore, (95% and 96%) accepted consanguinity that increase the potential for congenital anomalies (maternal and neonatal risks), also all adolescents (98% and 95%) expressed willingness to discourage advising your friends and neighbors about consanguineous marriage. Chi-square analysis showed these changes were highly significant ($p < 0.05$), demonstrating the program's strong impact in dispelling myths and fostering preventive attitudes.

Table (4) & Figure (2): Illustrates a remarkable improvement in adolescents' attitudes toward consanguineous marriage following the counseling-based intervention. Initially, only 13% of participants exhibited positive attitudes, while 63% held negative

ones. After the sessions, positive attitudes rose sharply to 94%, reflecting an 81% increase, whereas neutral and negative attitudes declined by 25% and 59%, respectively. These results clearly demonstrate the counseling program's strong effectiveness in transforming adolescents' perceptions and promoting more informed attitudes.

Table (5): Exhibits that the counseling-based educational intervention significantly enhanced the mean scores of all HBM dimensions among adolescents in both Kafr El-Sheikh and El-Gharbia governorates related to consanguineous marriage compared to pre intervention. This indicates that the structured counseling sessions were effective in enhancing adolescents' risk perception and promoting healthier beliefs toward consanguineous marriage.

Figure (3): Displays a substantial enhancement in adolescents' risk perception toward consanguineous marriage after the counseling-based educational intervention in both Kafr El-Sheikh and El-Gharbia governorates. Initially before intervention, most participants exhibited low risk perception (85% and 88%) respectively, and only a few had high risk perception (5% and 3%). Following the intervention, high risk perception levels rose sharply to 91% and 94%, while low and moderate perception levels declined significantly.

Figure (4): Demonstrates that adolescents in both Kafr El-Sheikh and El-Gharbia governorates reported high satisfaction levels regarding the counseling-based educational intervention (95% and 94% respectively). These results reflect the strong acceptability and effectiveness of the counseling program in engaging adolescents and meeting their learning needs.

Figures (5 and 6): Depicts the relationship between adolescents' knowledge and attitudes toward consanguineous marriage in Kafr El-Sheikh and El-Gharbia governorates. The results show that, following the counseling-based intervention, the majority of adolescents demonstrated both a high level of knowledge and a positive attitudes toward consanguineous marriage. This indicates a strong association between improved knowledge and favorable attitudinal change after the educational program.

Table (1): Frequency distribution of socio-demographic characteristics of the studied adolescents. (No=200)

Socio-demographic Characteristics	Kafr El-Sheikh (n=100)		El-Gharbia (n=100)		Test of sig.	P
	No.	%	No.	%		
Age/years						
(18-19) years	73	73.0	75	75.0	$\chi^2=0.104$	0.747
(19-20)years	27	27.0	25	25.0		
Min. – Max.	18.0 – 21.0		18.0 – 22.0		t=1.044	0.298
Mean ± SD.	19.79 ± 0.87		19.94 ± 1.14			
Gender						
Male	60	60	55	55	$\chi^2=5.352$	^{MC} p = 0.218
Female	40	40	45	45		
Adolescents Living with their						
Mother and father	86	86.0	91	91.0	$\chi^2=6.475$	^{MC} p = 0.149
Mother and her husband	3	3.0	5	5.0		
Father and his wife	3	3.0	1	1.0		
Uncle or aunt	7	7.0	1	1.0		
Grandfather or grandmother	1	1.0	2	2.0		
Found of Consanguinity between parents						
Not Found	60	60.0	54	54.0	$\chi^2= 0.734$	0.391
Found	40	40.0	46	46.0		

χ^2 : Chi-square test MC: Monte Carlo for the Chi-square

*: Statistically significant at $p \leq 0.05$.

Table (2): Percent distribution of adolescent student's knowledge regarding consanguineous marriage. (No=200)

Adolescents' Knowledge	Kafr El-Sheikh (n=100)				El-Gharbia (n=100)				χ^2	P
	No.	%	No.	%	No.	%	No.	%		
	Pre Intervention		Post Intervention		Pre Intervention		Post Intervention			
Concept of consanguineous marriage										
Correct and complete answers	18	18.0	94	94.0	7	7.0	93	93.0	8.092*	0.017*
Correct and incomplete answers	18	18.0	3	3.0	4	4.0	5	5.0		
Incorrect answers or don't know	64	64.0	3	3.0	89	89.0	2	2.0		
Degrees of consanguineous marriage										
Correct and complete answers	13	13.0	90	90.0	22	22.0	91	91.0	17.834*	<0.001*
Correct and incomplete answers	28	28.0	6	6.0	13	13.0	5	5.0		
Incorrect answers or don't know	59	59.0	4	4.0	65	65.0	4	4.0		
Contributing factors to consanguineous marriage										
Correct and complete answers	13	13.0	90	90.0	15	15.0	91	91.0	10.519*	0.005*
Correct and incomplete answers	25	25.0	6	6.0	8	8.0	7	7.0		
Incorrect answers or don't know	62	62.0	4	4.0	77	77.0	2	2.0		
Consequences of consanguineous marriage										
Correct and complete answers	18	18.0	94	94.0	7	7.0	95	95.0	17.834*	<0.001*
Correct and incomplete answers	18	18.0	3	3.0	4	4.0	3	3.0		
Incorrect answers or don't know	64	64.0	3	3.0	89	89.0	2	2.0		
Genetic disorders linked to consanguineous marriage										
Correct and complete answers	14	14.0	94	94.0	12	12.0	95	95.0	10.961*	0.004*
Correct and incomplete answers	31	31.0	4	4.0	73	73.0	5	5.0		
Incorrect answers or don't know	55	55.0	2	2.0	15	15.0	0	0.0		
Hereditary disorders associated with consanguineous marriage										
Correct and complete answers	27	27.0	95	95.0	47	47.0	99	99.0	9.677*	0.008*
Correct and incomplete answers	21	21.0	3	3.0	20	20.0	1	1.0		

incomplete answers										
Incorrect answers or don't know	52	52.0	2	2.0	33	33.0	0	0.0		
Importance of counseling-based intervention program										
Correct and complete answers	7	7.0	98	98.0	13	13.0	94	94.0	8.144*	0.017*
Correct and incomplete answers	27	27.0	1	1.0	12	12.0	6	6.0		
Incorrect answers or don't know	66	66.0	1	1.0	75	75.0	0	0.0		
Components of counselling intervention for consanguineous marriage										
Correct and complete answers	8	8.0	3	3.0	92	92.0	1	1.0	51.366*	<0.001*
Correct and incomplete answers	42	42.0	2	2.0	5	5.0	3	3.0		
Incorrect answers or don't know	50	50.0	95	95.0	3	3.0	96	96.0		
Premarital investigations for both males and females										
Correct and complete answers	16	16.0	98	98.0	6	6.0	95	95.0	16.526*	<0.001*
Correct and incomplete answers	12	12.0	1	1.0	1	1.0	5	5.0		
Incorrect answers or don't know	72	72.0	1	1.0	93	93.0	0	0.0		
Specific examinations related to consanguineous marriage										
Correct and complete answers	7	7.0	98	98.0	13	13.0	94	94.0		
Correct and incomplete answers	27	27.0	1	1.0	12	12.0	6	6.0	8.144*	0.017*
Incorrect answers or don't know	66	66.0	1	1.0	75	75.0	0	0.0		

 χ^2 : Chi-square test*: Statistically significant at $p \leq 0.05$

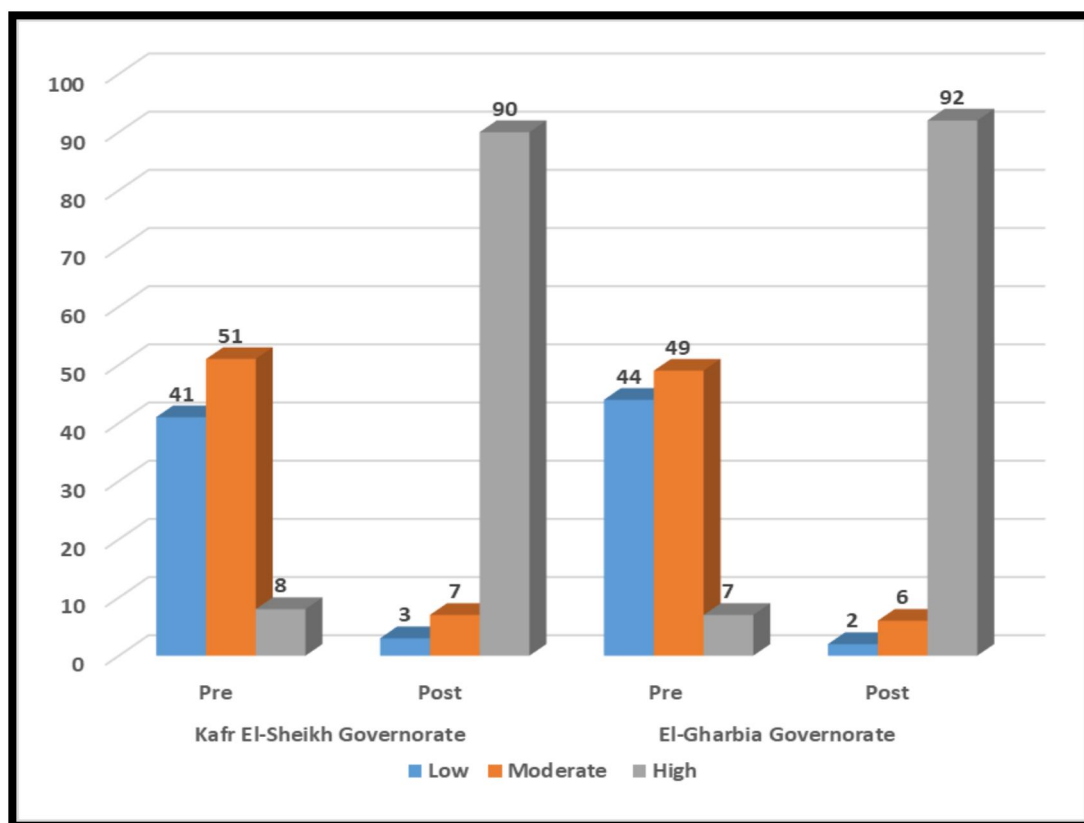


Figure (1): Adolescents' total knowledge score about consanguineous marriage.

Table (3): Percentage distribution of the studied adolescents in relation to their attitudes regarding consanguineous marriage. (n=200)

Adolescents' Attitudes	Kafr El-Sheikh (n=100)				El-Gharbia (n=100)				χ^2	P
	No.	%	No.	%	No.	%	No.	%		
	Pre Intervention		Post Intervention		Pre Intervention		Post Intervention			
Consanguinity helps in the continuation of marital life										
Disagree	18	18.0	94	94.0	7	7.0	93	93.0	8.092*	0.017*
Neutral	18	18.0	3	3.0	4	4.0	5	5.0		
Agree	64	64.0	3	3.0	89	89.0	2	2.0		
Consanguinity strengthens family ties.										
Disagree	13	13.0	90	90.0	22	22.0	91	91.0	17.834*	<0.001*
Neutral	28	28.0	6	6.0	13	13.0	5	5.0		
Agree	59	59.0	4	4.0	65	65.0	4	4.0		
Consanguinity makes couples know each other and everything is clear before marriage.										
Disagree	13	13.0	90	90.0	15	15.0	91	91.0	10.519*	0.005*
Neutral	25	25.0	6	6.0	8	8.0	7	7.0		
Agree	62	62.0	4	4.0	77	77.0	2	2.0		
Consanguinity is less costly (reducing marriage expenses)										
Disagree	18	18.0	94	94.0	7	7.0	95	95.0	17.834*	<0.001*
Neutral	18	18.0	3	3.0	4	4.0	3	3.0		
Agree	64	64.0	3	3.0	89	89.0	2	2.0		
Consanguinity causes problems between families.										
Disagree	14	14.0	94	94.0	12	12.0	95	95.0		
Neutral	31	31.0	4	4.0	73	73.0	5	5.0	10.961*	0.004*
Agree	55	55.0	2	2.0	15	15.0	0	0.0		
Customs and traditions lead to Consanguinity.										
Disagree	27	27.0	95	95.0	47	47.0	99	99.0	9.677*	0.008*
Neutral	21	21.0	3	3.0	20	20.0	1	1.0		
Agree	52	52.0	2	2.0	33	33.0	0	0.0		
Customs and traditions lead to Consanguinity.										
Disagree	7	7.0	98	98.0	13	13.0	94	94.0	8.144*	0.017*
Neutral	27	27.0	1	1.0	12	12.0	6	6.0		
Agree	66	66.0	1	1.0	75	75.0	0	0.0		
Consanguinity increase the potential for congenital anomalies (maternal and neonatal risks)										
Disagree	8	8.0	3	3.0	92	92.0	1	1.0	51.366*	<0.001*
Neutral	42	42.0	2	2.0	5	5.0	3	3.0		
Agree	50	50.0	95	95.0	3	3.0	96	96.0		
Advising consanguineous marriage to your friends and neighbors										
Disagree	16	16.0	98	98.0	6	6.0	95	95.0	16.526*	<0.001*
Neutral	12	12.0	1	1.0	1	1.0	5	5.0		
Agree	72	72.0	1	1.0	93	93.0	0	0.0		
Preference a Consanguineous marriage										
Disagree	7	7.0	98	98.0	13	13.0	94	94.0		
Neutral	27	27.0	1	1.0	12	12.0	6	6.0	8.144*	0.017*
Agree	66	66.0	1	1.0	75	75.0	0	0.0		

χ^2 : Chi-square test, FE: Fisher Exact for Chi-square test, *: Statistically significant at $p \leq 0.05$

Table (4): Adolescents Total Scale of Attitude about Consanguineous Marriage.

Score of Attitude	Kafr El-Sheikh (n=100)				El-Gharbia (n=100)				Test of sig.	P
	Pre Intervention		Post Intervention		Pre Intervention		Post Intervention			
	No.	%	No.	%	No.	%	No.	%		
Attitude										
Positive attitude ≥ 75 %	4	4.0	95	95.0	13	13.0	94	94.0	$\chi^2=$ 10.515*	<0.001*
Neutral 50 ≤ 75 %	43	43.0	3	3.0	27	27.0	2	2.0		
Negative attitude <50%	53	53.0	2	2.0	63	63.0	4	4.0		
Percent score									t=3.590*	<0.001*
Min. – Max.	43.75 – 100.0				50.00 – 100.0					
Mean ± SD.	72.75 ± 14.56				79.56 ± 12.18					

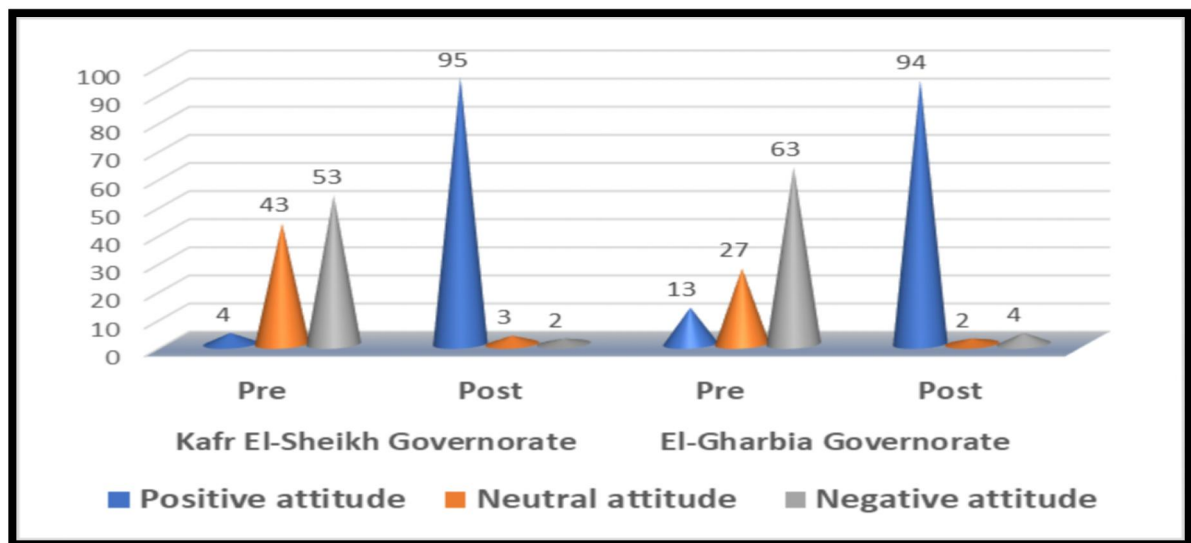
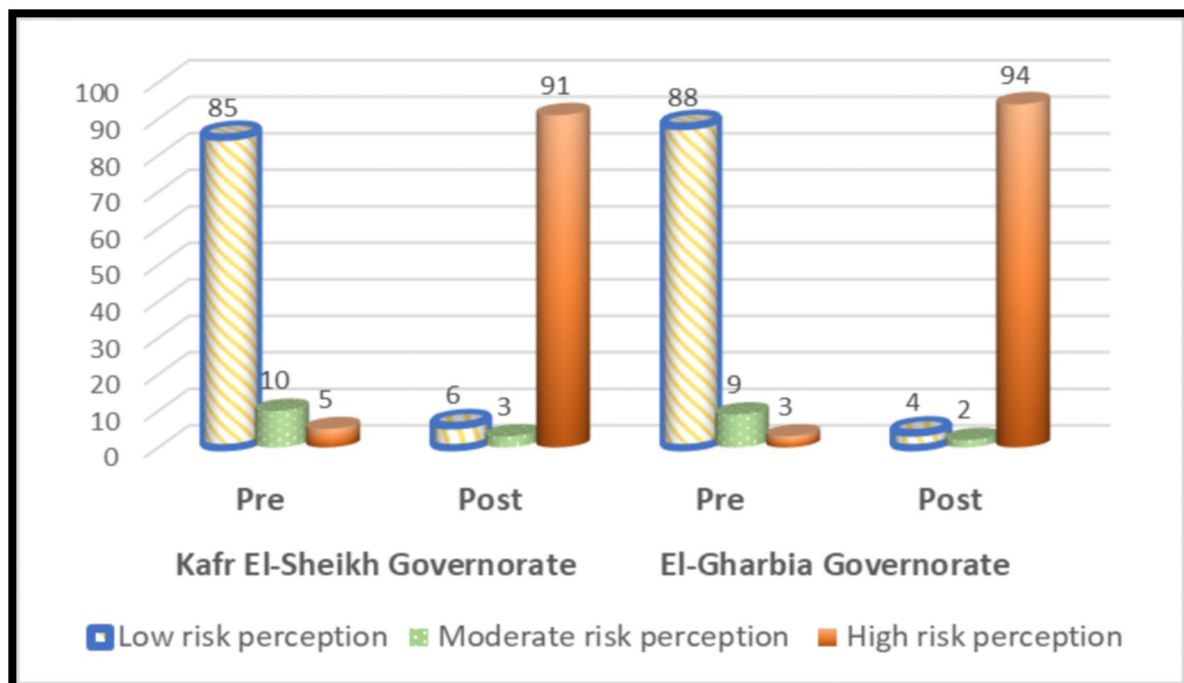
 χ^2 : Chi-square test: Student t-test*: Statistically significant at $p \leq 0.05$ 

Figure (2): Adolescents Total Scale of Attitude about Consanguineous Marriage.

Table 5: Comparison of Students' Risk Perception Mean $\pm$ SD Regarding Consanguineous Marriage according to HBM Pre- and Post-Intervention (n = 200)

Perception Domain	Kafr El-Sheikh		El-Gharbia		t-test	p-value
	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD		
Perceived susceptibility	12.8 $\pm$ 3.1	19.6 $\pm$ 2.4	13.8 $\pm$ 3.1	20.6 $\pm$ 3.4	22.14	<0.001**
Perceived severity	13.9 $\pm$ 3.4	20.1 $\pm$ 2.7	12.9 $\pm$ 3.4	19.2 $\pm$ 1.7	19.87	<0.001**
Perceived benefits	15.2 $\pm$ 2.9	21.3 $\pm$ 2.2	14.2 $\pm$ 2.9	22.4 $\pm$ 4.2	23.55	<0.001**
Perceived barriers	13.7 $\pm$ 3.4	19.8 $\pm$ 2.7	15.7 $\pm$ 3.4	18.9 $\pm$ 3.7	19.87	<0.001**
Cues to actions	14.2 $\pm$ 2.9	21.3 $\pm$ 2.2	16.2 $\pm$ 2.9	20.4 $\pm$ 1.2	23.55	<0.001**
Total Mean $\pm$ SD Risk perception score	69.8 $\pm$ 6.8	102.1 $\pm$ 5.9	72.8 $\pm$ 7.6	101.5 $\pm$ 4.3	29.66	<0.001**

**Figure (3): Total scale of adolescents' risk perception about Consanguineous Marriage.**

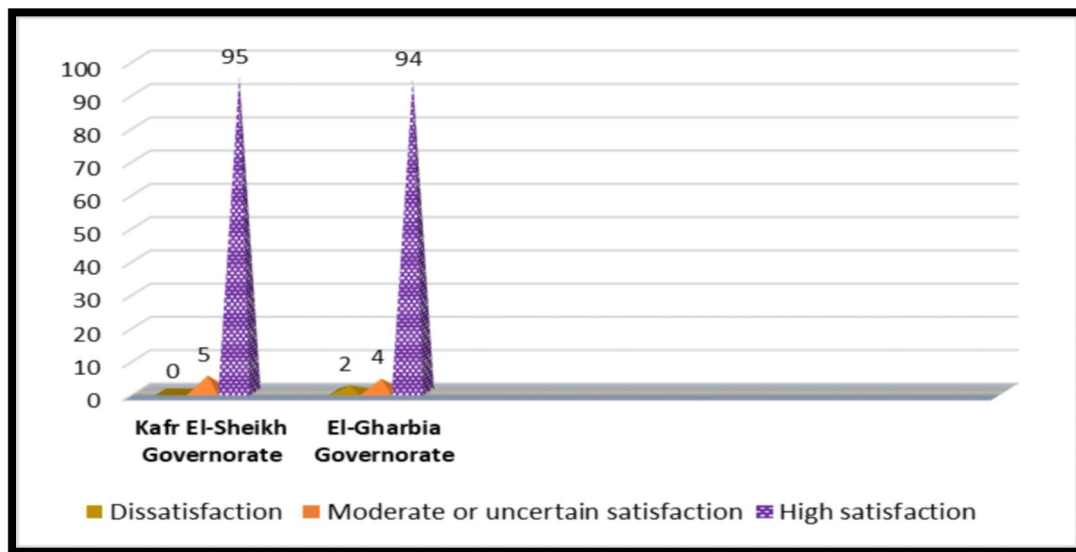


Figure (4): Total scale of adolescents' satisfaction after a counselling-based intervention program regarding Consanguineous Marriage.

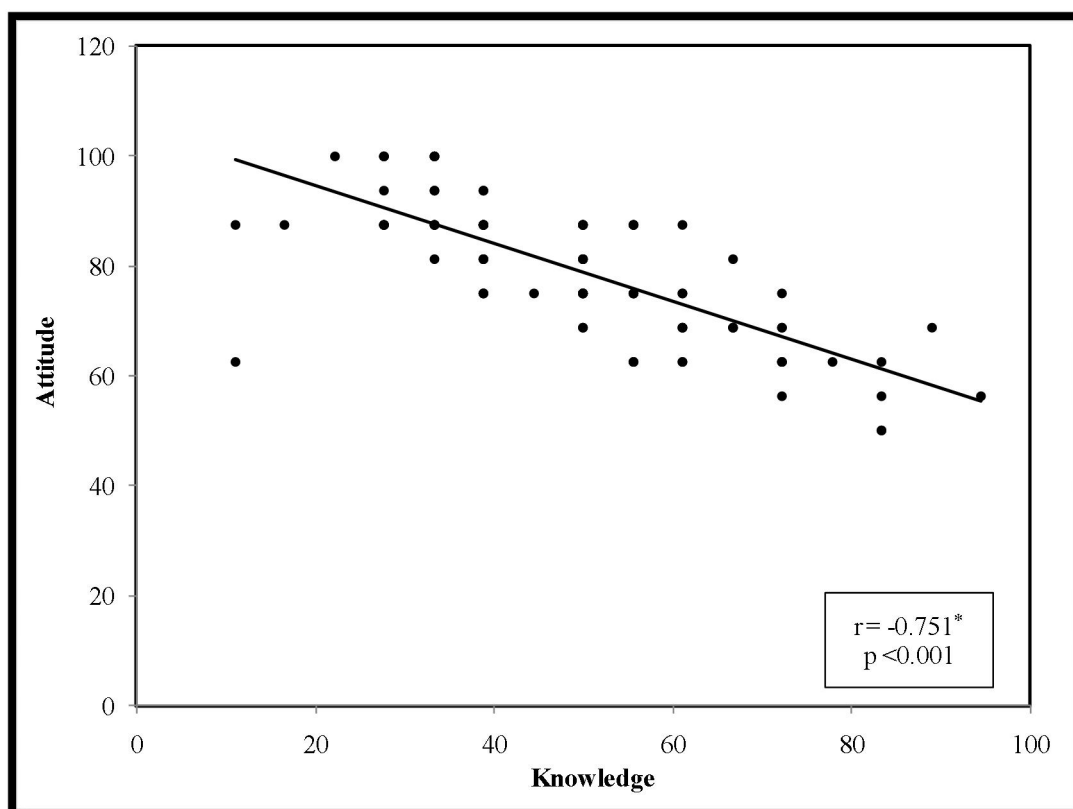


Figure (5): Association between knowledge and attitude among Kafr El-Sheikh adolescents

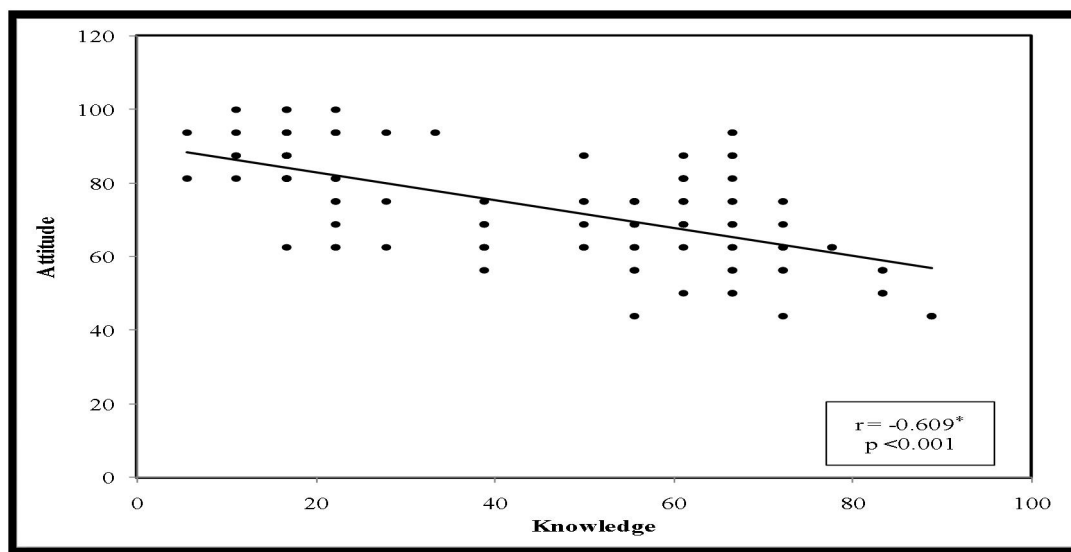


Figure (6): Association between knowledge and attitude among El-Gharbia adolescents

Discussion:

Consanguineous marriage has long been a topic of debate, primarily due to concerns about its potential adverse effects on reproductive health. However, most existing studies on consanguinity have not adequately focused on identifying high-risk populations or providing them with targeted educational and preventive information to reduce related health risks. To ensure the success of any health program, several factors must be carefully evaluated and considered. When designing an educational curriculum aimed at correcting misconceptions and raising awareness, it is crucial to focus on the target population, particularly adolescents and university students since their knowledge and attitudes significantly shape their future decisions, including the selection of a life partner. (Aljabri, et al 2025; El Goundali, Chebabe, Laamiri, & Hilali, 2022; Khayat, et al 2024).

The current study concerned adolescents from both sexes living in the largest cities (Kafr El-Sheikh and El-Gharbia governorates, Egypt). They were around the age of 18-19 years and most of them were living with their parents. Coincidentally, at

least two-fifths of them originated from consanguineous marriages.

The results of this study portrayed that adolescents from Kafr El-Sheikh and El-Gharbia Governorates, Egypt, demonstrated a statistically significant enhancement in their knowledge about consanguineous marriage after participating in the counseling-based educational intervention compared to the pre-intervention phase. Before the sessions, minority of the participants exhibited correct knowledge, reflecting limited awareness of the genetic, social, and health implications of consanguinity. However, following the counseling program, most of the adolescents achieved correct knowledge scores, indicating a marked enhancement in knowledge.

This finding is consistent with the results of (Nasser, et al 2025), who reported that the majority of participants demonstrated good knowledge regarding consanguinity following an educational intervention. Moreover, (Almazroua, et al., 2020) demonstrated a statistically significant enhancement in adolescents' knowledge about consanguineous marriage after participating in the counseling-based

educational intervention compared to the pre-intervention phase.

From the researcher's point of view, this enhancement can be attributed to the effectiveness of the structured counseling sessions, which provided clear, evidence-based, and culturally relevant information. The interactive teaching methods likely encouraged active participation, clarified misconceptions, and reinforced learning through discussion and visual materials. Moreover, the program addressed key aspects of consanguineous marriage such as its genetic risks, potential health outcomes, helping adolescents grasp the importance of informed decision making before marriage. These results underscore the essential role of targeted counseling interventions in promoting awareness and enhancing adolescents' knowledge toward healthier marital and reproductive choices. In contrast, the current study's results differ from those of **(Emam, Fahmy, & Saleh, 2024)**, who found that students possessed insufficient knowledge about premarital counseling programs. This discrepancy may be attributed to differences in the nature and effectiveness of the educational interventions, as well as variations in participants' exposure to health education and cultural awareness regarding consanguineous marriage.

Regarding the attitudes of the studied students toward consanguineous marriage, the present study revealed that the minority of the participants initially had a positive attitude before the counseling intervention, which increased to majority after the sessions. This enhancement can be attributed to the enhanced awareness gained through the counseling program, which clarified the genetic and social risks associated with consanguineous unions. By addressing misconceptions and providing scientific evidence about potential adverse outcomes, the counseling sessions effectively influenced students' perceptions, leading to a more informed and cautious attitudes toward consanguineous marriage.

These findings agree with those of **(Fattah, 2020)**, who found that the majority (85%) of university students exhibited a positive attitude following participation in a premarital education program. Similarly, **(Omi-Ujuanbi, & Osumah, 2024)**, reported inconsistent results, indicating that 90% of the study participants developed a negative attitude toward consanguineous marriage after the intervention, emphasizing that the results of premarital screening should influence marriage decisions. These studies collectively support the current findings, highlighting the effectiveness of educational and counseling interventions in reshaping adolescents' attitudes toward consanguineous marriage.

Concerning, students' attitudes toward strengthens family ties, makes couples know each other and everything is clear before marriage as well as consanguinity is less costly than non-consanguinity. The same reasons for participant agreeing these attitudes in current study before the counselling based intervention were declared precisely in a comparable study done by **(Semary, Metwally, El-madawye, & Hassneen, 2025)**, who revealed that consanguineous marriage has been a societal pattern among Egyptians. From the researcher point of view, the participant attitude toward consanguinity among Egyptian is nearly the same in all Arab countries. It includes preservation of the family constitution, stability, permanency as well as keeping belongings. It has financial compensation relating to offering or bride wealth sum and ease of conjugal arrangements. It will also reinforce family ties and build a closer relationship between the wife and her in-laws. This means that it has significant social and economic advantages.

Regarding risk perception concerning consequences of marriage the majority of them in correctly agree on responses about the risk consequences of marriage such as adverse physical, psychological, and social health consequences of adolescent early

marriage. The study agrees with **(Yoosefi Lebni, et al., 2023)**, found that the majority of study correctly agreed responses about the risk consequences of marriage such as adverse physical, psychological, and social health consequences of consanguinity including physical health problems, continuing conflict with spouse and domestic violence, and such as tension, and stress.

Premarital counseling is a key preventive strategy especially for consanguinity marriage aimed at reducing the incidence of genetic disorders, congenital anomalies, and various medical and psychosocial marital problems. In the present study, most of the participating students expressed high levels of satisfaction with the topic, recognized its importance in promoting healthy marital choices, and demonstrated a strong intention to undergo premarital counseling before consanguinity marriage. This reflects a growing awareness among adolescents of the value of such programs in ensuring informed decision-making and improving future family health outcomes, **(AL-asfar, Hassan, & Saleh, 2024)**.

These findings are consistent with those of **(Ebid, Soliman, Abo-Shabana, & Metwaly, 2021)**, who reported that the majority of their study participants expressed satisfaction and recognized the importance of implementing premarital counseling programs related to consanguineous marriage. This agreement reinforces the significance of educational interventions in increasing awareness and promoting positive attitudes toward premarital counseling as a preventive health measure.

Concerning the correlation between the participants' knowledge and attitudes toward consanguineous marriage following the counseling intervention, the present study demonstrated a positive and statistically significant association between adolescent students' knowledge and attitude regarding consanguineous marriage. This suggests that higher levels

of knowledge were directly linked to more positive attitudes. The improvement in both domains can be attributed to the enhancement of the counseling-based educational sessions, which provided clear, evidence-based, and culturally appropriate information that corrected misconceptions and reinforced understanding of the potential genetic and health risks associated with consanguinity through interactive discussions and visual aids, participants were able to comprehend the long-term consequences of consanguineous marriage, recognize the importance of premarital screening, and appreciate the value of informed decision-making before marriage. Consequently, their awareness and understanding increased, their attitudes shifted toward rejecting harmful traditional practices and supporting preventive measures. This finding aligns with **(Alotaibi, et al., 2022)**. Who suggested that improved knowledge serves as a foundation for behavioral and attitudinal change. Therefore, enhancing adolescents' awareness through structured counseling programs can be a powerful tool in shaping healthier attitudes and reducing the prevalence of consanguineous marriage in future generations, **(Abd Eltawab, Eldesokey, Mostafa, & Morad, 2025)**.

This study agreed **(Jairoun, et al., 2024)** with the study reported a positive and highly statistically significant correlation between the total students' knowledge and attitude scores regarding consanguineous marriage after the intervention program. This indicates that as participants' knowledge increased, their attitudes became more informed and preventive. Overall, the findings clearly demonstrate a significant enhancement in both knowledge and attitudes among the studied sample following the counseling-based intervention compared to the pre-intervention phase, thereby supporting the current research hypothesis that educational counseling effectively enhances awareness and fosters positive

behavioral change toward consanguineous marriage.

The result pointed to the importance of educating adolescent students about the hazards of the consanguineous through instructive curriculum in different grades. Thus, there is a necessity to advance those students' perception relating to consanguineous marriage. Consequently, healthcare givers, especially obstetric and pediatric nurses, can advocate for adolescents based on their needs.

Conclusion:

The results of the study demonstrated that counseling-based educational intervention was highly effective in improving adolescents' understanding and attitudes toward consanguineous marriage. After the program, participants in both Kafr El-Sheikh and El-Gharbia governorates showed remarkable gains in knowledge, more accurate risk perceptions, and a significant shift toward rejecting traditional misconceptions. The vast majority also reported high satisfaction with the intervention. Finally, the research hypotheses were achieved which confirm that structured, evidence-based counseling is a powerful strategy for promoting awareness, fostering positive behavioral change, and encouraging preventive attitudes toward consanguineous marriage among adolescents

Recommendations:

- Health teaching programs should be carried out for adolescents in preparatory and secondary school as well as universities to fill the gaps in their risk perception regarding consanguineous marriage.
- Submission of inclusive health education about reproductive health and the meaning, weight, and consequence of premarital and genetic counseling through different masses.
- Future Research: The study's outcomes can serve as a foundation for further research on the impact of consanguinity on reproductive

health, helping to build a comprehensive body of knowledge in this field.

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