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Original Article

Effect of Educational Program on Maternity Nursing Students' Perception toward Sustainability Development: Challenges for Women Empowerment and Reducing Maternal Mortality

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ABSTRACT

Background: The integrative contributions to sustainability development (SD) are purposefully designed to suit the broader vision for maternal health. Hasten sustainable reductions in the maternal mortality besides promotions of maternal empowerment are multidimensional tasks. A devotion to knowledge besides competencies nurses needed to respond to global sustainability challenges for women health. **The research aim** was to evaluate the effect of educational program on maternity nursing students' perception toward sustainability development: challenges for women empowerment and reducing maternal mortality. **Research design;** a quasi-experimental research design was utilized to meet the aim of this research. **Setting;** held at Faculty of Nursing, Tanta University, Egypt. **Subjects:** A purposive sample of 100 nursing students who at third academic year 2023-2024 from the beforehand stated setting. **Three tools** were utilized for **the data collection**; **Tool (I):** Maternity nursing students' knowledge regarding women empowerment and maternal mortality structured questionnaire; **Tool (II):** Women Empowerment Attitude Scale (WEAS); besides **Tool (III):** Sustainability Consciousness Questionnaire (SCQ). **Results:** A statistically significant positive improvement of the maternity nursing students' perception was observed at immediately and one month after the implementation of SD program**. Conclusion and recommendations:** SD program was effective at enhancing maternity students' perception toward SD, women empowerment, and maternal mortality which rendered into higher knowledge, attitude, and behavior scores. Consequently, this program should be conducted endlessly to enhance and refresh nurses' performance in diverse nursing focuses.

Keywords: Educational program, nursing students' perception, sustainability development.

Introduction

Sustainability Development (SD) will impact positively on woman's health as well as healthcare systems' capacity to deliver suitable and well-timed care. Furthermore, due to a deficiency of resources, nurses want to practice in more sustainable ways **(Aronsson, Nichols, Warwick, & Elf, 2023). A woman's health** reflects their individual biology, physical environments, economic, and sociocultural factors. These factors affect both the duration and the quality of her life. ***Regarding biological factor;*** Women's

reproductive capability plays an important role in shaping their lives and health experiences; *adolescence* represents a dynamic developmental period of life; *young women* make important choices about lifestyle behaviors including diet, physical activity, sexual activity, use of tobacco, alcohol, and other drugs. All of these decisions can influence their health and well-being throughout adulthood **(Arafa et al., 2024; Moreno & Jurado, 2024).** Moreover, research has repeatedly indicated that timely and adequate *prenatal care* greatly enhances the chances for positive pregnancy outcomes **(Ouza et al., 2024).** While *motherhood* is a defining feature of adult life for many women, most spend the greater part of their reproductive years trying to avoid pregnancy through using some form of contraception. Furthermore; the *gynecological health* is not only an important component of women's health during their reproductive years, but throughout the course of their lives. The average woman spends a third of her life beyond menopause **(Manjula, 2022).**

Physical Environmental factors also, contribute substantially to the cause of many women diseases. Adverse environmental conditions range from water, air, and soil pollution to contamination through the workplace **(Fuller et al., 2022)**. Occupational hazards include exposure to lead, chemicals, pesticides, tobacco smoke, and continuous noise. Home and community environmental factors; from radon, lead-based paints, electromagnetic fields, food, and cosmetics to heatstroke, hypothermia, and violence affect women's health. Researchers are increasingly concerned that violence may also be an important hidden cause of maternal mortality **(Ramezanifar et al., 2023).** As well as ***economic factor affect woman's health;*** Women who live in poverty or have less than a high school education have shorter life spans; higher rates of illness, injury, disability, and death; and more limited access to high-quality health care services **(Krueger, Dehry, & Chang, 2019; Manjula, 2022).** As ***regard, socio-cultural factor and woman's health;*** maintaining women's health is crucial for societal safety, given their important position in society. A woman's reproductive life, including pregnancy, postpartum, family planning, and contraception, necessitates additional safeguards. Empowerment requires strong decision-making and access to health rights. However, family planning and frequent pregnancy can harm women's health and hinder their empowerment (**UNDP**, 2020; **Hamed, 2022**).

Women's empowerment is the process that denotes to women’s possession of resources and their capacity to advantage from and manage them to attain a set of achievements.Women's empowerment principles include training and professional development, empowering projects and policies, establishing high-level institutional leadership, achieving equality, justice and non-discrimination, respecting all individuals, as well as promoting gender equity through societal initiatives. **Extents of women empowerment** comprise of **economic, political, sociocultural,**

legal, as well as **psychological** empowerment. ***Women's economic empowerment*** includes equal access to markets and job opportunities, participation in decision-making and financial independence through work. *While**, women's political empowerment*** can be achieved by granting them the right to vote and participate in the political system with political education. Additionally**,** ***sociocultural empowerment*** includes educating girls and minimizing discrimination against them by challenging male-dominated norms. Moreover, ***legal empowerment*** teaches women about their legal rights and provides community assistance to help them exercise them. Finally, ***psychological empowerment*** via self-respect and self-efficacy raises social awareness of women's oppression that promotes women's sense of belonging and inclusion **(Hussein, 2019; Hamed, 2022).**

Women's empowerment indicators consist of literacy levels; educated girls and women; movement constraints; employment outside the house; civic group membership; ownership patterns; and self-confidence. The outcomes of women's access to these previous resources are assessed through pointers of women's aptitude to influence family decisions, their capacity to allocate family tasks among individuals, levels of violence against women, the number of women who be able to undertake leadership positions, contraceptive use rates and maternal mortality rates **(Pratley & Sandberg, 2018; Hamed, 2022)**.

Maternal mortality refers to deaths due to complications from pregnancy or childbirth. According to United Nation (UN) inter-agency estimates; from 2000 to 2020**,** the global maternal mortality ratio declined by 34 % - from 339 deaths to 223 deaths per 100,000 live births. This translates into an average annual rate of reduction of 2.1 %. While substantive, this is about one third of the 6.4 % annual rate needed to achieve the Sustainable Development Goal (SDG) of 70 maternal deaths per 100,000 live births by 2030. UNICEF, World Health Organization (WHO) and other partnering agencies are working closely with country governments and other partners to accelerate progress in maternal and newborn health. By increasing attention and investment, working collaboratively with governments, communities, and families, and focusing on the areas of greatest need, significant improvements can be seen in maternal health coverage, equity, and empowerment **(WHO, UNICEF, & UNFPA, 2023).**

Developing effective strategies to change behavior for promoting the health of women across the lifespan, empower women to make informed choices about their health, as well as translate policy decisions into effective focused women's health programs are critical for improving the quality and length of sustainable life. **Sustainability** is a dynamic state that has relations between ecological, economic, and social systems in order to achieve the ability to avoid the shortage of natural resources as well as maintain

an ecological balance. Egypt's Vision 2030 is a transfer in the direction of inclusive development, with welfare and prosperity as the main economic goals to be achieved through sustainable development, social justice, and balanced geographical and sectorial expansion (**Pakkan, 2022**). The healthcare system has a pure mission to attain the **SDGs**, to safeguard healthy survives and indorse wellbeing for each one of all eternities' among the other goals **(United Nations, 2020).**

Sustainable Development Goals (SDGs); A set of 17 interconnected global objectives include 169 targets agreed by the 193 member states of the UN that was created as a road map (plan) built on the success of the Millennium Development Goals (MDGs). They are covering the extents of the economy; society; education; besides the environment in order to achieve a well and extra sustainable future for altogether people. The 17 SDGs are: no poverty; zero hunger; good health besides wellbeing; quality education; gender equality; access to clean energy; decent work besides economic growth; industry; innovation besides infrastructure; reducing inequality; sustainable cities besides communities; responsible consumption besides production; climate action; life below the ocean; life on land; peace; justice; besides strong institutes, in addition to partnerships for the goals. All goals of SDGs by indirect ways can affect women's health but SDG3 as well as SDG5 are focused directly on the women's health and empowerment **(Liu, Huang, Guo, & Liu, 2023).**

Moreover, the Education for sustainable development (ESD) is indorsed as one central constituent in the effort toward SD. SDG4 in specific targets the title role of ESD in this respect. The significance of the cultural specificity in the ESD is stressed in several universal policy documents, however there are little cross-cultural researches that center on the wide perspective of SD besides ESD **(Berglund, Gericke, Boeve-de Pauw, Olsson, & Chang, 2020)**. ESD is a dynamic concept that utilizes all aspects of public awareness, education and training to create or enhance an understanding of the linkages among the issues of SD and to develop the knowledge; skills; perspectives as well as values which will empower people of all ages including women to assume responsibility for creating and enjoying a sustainable future. Higher education is a pre-requisite for economic, social and cultural development of a society. It is not only beneficial for the society but for individuals as well **(UNESCO, 2017; Shaw et al., 2021)**.

Significance of the study:

A few numbers of countries have realized an annual rate for maternal mortality reduction of 15 % or more in the last 20 years, bringing them closer or past their target reduction rates to meet global goals of SD **(WHO, UNICEF, & UNFPA, 2023)**. New educational initiatives are under way to enhance women's knowledge of health issues

and to improve the care women receive as well as women empowerment. These efforts help ensure that health care professionals have up-to date information and training on women's health issues. The nursing profession has a wide-reaching impact on implementing SDGs especially SDG3 as well as SDG5 are directly related to our professional responsibility. Since nurses comprise the largest segment of the global healthcare workforce. Nursing students are the prospect health care providers, who are supposed to provide health services and convince their surrounding communities regarding SD. As well they require additional encouragement to empower women for utilizing the available community services which is being an essential part of the primary health care services **(The World Health Organization, 2022)**. Hence the nursing education must prepare students with the knowledge and skills needed to practice sustainably and address the health and wellbeing consequences of climate change (**International Council of Nurses, 2018**). This needs a transferal from the outdated aim of the nursing education to advance clinical skills besides competencies towards a curriculum that includes SD issues (**Goodman & East, 2014**; **Aronsson et al., 2023**) Therefore, this research aim was to evaluate the effect of educational program on maternity nursing students' perception toward sustainability development; challenges for women empowerment and reducing maternal mortality.

Research Aim:

The current research aimed to evaluate the effect of educational program on maternity nursing students' perception toward sustainability development; challenges for women empowerment and reducing maternal mortality.

Research Hypothesis

- **H1:** Maternity nursing students' knowledge regard women empowerment and maternal mortality expected to be enhanced after the implementation SD educational program.
- **H2**: The implementation of the SD educational program expected to result in a significant enhancement in maternity nursing students' knowingness, attitude and behavior toward SD.
- **H3**: The implementation of the SD educational program predicted to result in a significant improvement in maternity nursing students' attitude regarding women empowerment.

Operational Definition

Maternity nursing students' perception in this research; it means knowledge, behavior and attitude of maternity nursing students regarding sustainability development as well as their knowledge and attitude regarding women empowerment.

Research Subjects and Method

Research design

A quasi-experimental research design is a type of research design which attempt to establish

a cause-and-effect relationship between an independent and dependent variable that was applied to achieve the aim of this research.

Research Setting

The study was carried out at maternity nursing students' classes for academic third year at Faculty of Nursing, Tanta University.

Research Subjects

A purposive sample of 100 maternity nursing students out of the total number of 1033 students of the third academic year 2023-2024 at Faculty of Nursing, Tanta University; during the first and second semesters at the aforementioned research setting. **Calculation of the sample size** is based on 95% confidence limit and 80% power of the study. The students were selected randomly from the previously mentioned setting according to **the following inclusive criterions;** Male or female students, third academic year nursing students (maternal and neonatal health nursing semester) and willing to participate in the research.

Equation of power analysis

Unlimited population:

$$CI = \hat{p} \pm z \times \sqrt{\frac{p(1-p)}{n}}$$

Finite population:

$$CI' = \hat{p} \pm z \times \sqrt{\frac{\hat{p}(1-\hat{p})}{n'} \times \frac{N-n'}{N-1}}$$

Where

- z is z score. Z-score is a statistical measurement that describes a value's relationship to the mean of a group of values.
- p̂ is the population proportion.
- n and n' are sample size.
- N is the population size.

Research tools for data collection

Three tools were utilized to collect the essential data for this research as subsequent:

Tool (I): Maternity nursing students' knowledge regarding women empowerment and maternal mortality structured questionnaire: This tool was designed by the researchers after revising the related literatures **(WHO & United Nations Children's Fund, 2024; Sakhardande et al., 2022; & Getachew, Kassa, Ayana, & Amsalu, 2017)** to collect the needed data. It was involved two main parts;

Part 1: Students' socio-demographic data was utilized to assemble basic data regarding personal characteristics of the students like, age; sex; residence; marital status; besides previous training courses regarding SDGs.

Part 2: Assessment of maternity nursing students' knowledge regarding women empowerment and maternal mortality: This part was used to evaluate the students' knowledge regarding women empowerment and maternal mortality in the light of SD. It was entailed 10 open ended questions regarding definition of women empowerment and maternal mortality; indicators of maternal mortality; proposed SDGs related to women; factors affecting women health and empowerment; besides SD strategies for maximizing women empowerment and reducing maternal mortality. In addition to, the role of nurse

toward SD, obstacles of women empowerment in the light of SD, sustainable women's rights as well as maternity nurses contribution in minimizing maternal mortality.

Scoring system for maternity nursing students' knowledge was established and categorized by researchers as follows:

- **Correct and complete** answer was scored as **(2)**.
- **Correct and incomplete** answer was scored as **(1)**.
- **Incorrect answer/didn't know** was scored as **(0)**.

The students' knowledge regarding women empowerment and maternal mortality was evaluated giving **a total score ranged from 0-20**. **The total score of students' knowledge was classified** as next:

- **High level of knowledge:** 80-100% of the total score (16-20).
- **Moderate level of knowledge:** 60 - <80% of the total score (12- <16).
- **Low level of knowledge:** <60% of the total score (0-<12).

Tool (II): Women Empowerment Attitude Scale (WEAS): This part was adopted by the researchers from **Shuja, Aqeel, & Khan, (2020).** It was used to assess the maternity nursing students feeling; beliefs; as well as behavior concerning women empowerment. WEAS items was evaluated by the studied maternity nursing students on three- point Likert scale extended from; ***disagree*** given a score of 1mark, ***neutral*** given a score of 2 marks, and ***agree*** answers scored as 3 marks. The higher the score the stronger the attitude toward women empowerment, and vice versa. Three domains were included; personal freedom (8 items); equal rights (4 items); and lastly women empowerment related fears (4 items). The first two domains were normal positive statements while the third domain (women empowerment related fears) consisted of reverse items (***agree*** scored as 1 mark, ***neutral*** scored as 2 marks and ***disagree*** scored as 3 marks). The maternity nursing students scores regarding **WEAS** was evaluated giving a total score of 16- 48.

- **The total score of WEAS was categorized** as subsequent**:**
- **Positive attitude** toward **women empowerment** ≥ 80% (from 38.4 to 48).
- **Negative attitude** toward **women empowerment** <80% (from 16 to less than 38.4).

Tool (III): Sustainability Consciousness Questionnaire (SCQ): This tool was adopted by the researchers from **Gericke, Boeve-de Pauw, Berglund, & Olsson, (2019).** It was used to evaluate the maternity nursing students' knowingness, attitude besides behavior regard SD. In the SCQ tool; there were three psychological **constructs/sections** that **associated to** the three

dimensions of SD (environmental, social as well as economic).

Section 1: Sustainability Knowingness Questionnaire (SNQ) was utilized to measure the maternity nursing students' knowledge towards SD. It involved 19 items have three dimensions specifically; environmental (6 items), social (8 items) and economic (5 items). The studied maternity nursing students striking their answers to the SNQ items on a three- point Likert scale extended from ***disagree*** given a score of zero; ***neutral*** given a score of one mark; and ***agree*** answers scored as two marks. The students' knowledge about SD was evaluated giving a total score of 0-38. **The total score of SNQ was categorized as following:**

- **High level of knowledge** ≥ 80%. (from 30.4 to 38)
- **Moderate level of knowledge** 60 % - <80%. (from 22.8 to less than 30.4)
- **Low level of knowledge** <60%. (0 to less than 22.8)

Section 2: Sustainability Attitudes Questionnaire (SAQ) was used to measure nursing students' attitude towards SD. It comprised 14 items have three dimensions specifically; environmental (4 items), social (6 items) as well as economic (4 items). The studied maternity nursing students striking their answers to the SAQ items on a three- point Likert scale ranged from ***disagree*** given a score of zero; ***neutral*** given a score of one mark; and ***agree*** answers scored as 2 marks. The student attitude about SD was evaluated giving a total score of 0-28. **The total score of SAQ was categorized as follow:**

Positive attitude ≥ 80%. (from 22.4 to 28)

Negative attitude <80%. (from zero to less than 22.4)

Section 3: Sustainability Behavior Questionnaire (SBQ) was used to measure nursing students' behaviors regarding SD. It included 17 items have three dimensions specifically; environmental (7 items), social (6 items) as well as economic (4 items). The studied maternity nursing students striking their answers to the SBQ items on a three- point Likert scale extended from ***disagree*** given a score of zero; ***neutral*** given a score of one mark and ***agree*** answers scored as 2 marks. The student behavior about SD was evaluated giving a total score of 0-34. **The total score of SBQ was categorized as follow:**

- **Positive health behavior** ≥ 80%. (from 27.2 to 34)
- **Negative health behavior** <80%. (from zero to less than 27.2)

Method

- **Administrative steps:**

An official permission and approval illustrative the purpose of research was attained from dean of the Faculty of Nursing, Tanta University to conduct the research at the maternity nursing students' classes for third academic year.

- **The actual study (field work):**

Data were obtained over six months through a quasi-experimental research design from 100 maternity nursing students at Faculty of Nursing, Tanta University a long their third academic year 2023-2024 that started from the initiation of December 2023 till end of May 2024.

- **Operational procedure:**

The study was applied consistent with the subsequent steps:

A. Tools development:

- **Three tools** for collection of the data were used in this research; **Tool (I)** was adapted through researchers after revising the correlated literatures **(WHO & United Nations Children's Fund, 2024; Sakhardande et al., 2022; & Getachew, Kassa, Ayana, & Amsalu, 2017). Tool (II)** was adopted by the researchers from **Shuja, Aqeel, & Khan, (2020).** While **Tool (III)** was adopted by the researchers from **Gericke, Boeve-de Pauw, Berglund, & Olsson, (2019).**
- **Validity as well as reliability of research tools:** The research tools were verified for the content and construct validity through a jury of five specialists in the field of Maternal and Neonatal Health Nursing and modifications were done accordingly. Tools reliability was tested through scheming Cronbach's alpha from the data collected in the pilot study. The alpha value was noted to be **0.98** demonstrating great reliability of the research tools.

B. Ethical besides legal considerations:

Approval of the Faculty of Nursing Scientific Research Ethical Committee was achieved (The approval code; 338-11-2023). Then, the researchers presented themselves to the students, then elucidated the aim of research to get their agreement, collaboration, in addition to their informed consent. The desire to withdraw from the research at any time was respected. In addition, the researchers confirmed that the research didn't have any damage / discomfort for whole sample. Furthermore, the students were assured regarding their privacy as well as confidentiality of collected data which was utilized solitary for the purpose of this research.

C. The Pilot Study:

After development of the tools, a pilot study was accomplished earlier the actual data collection on 10% of the maternity studied nursing students (Ten students) to ascertain the clarity, feasibility and applicability of the tools. Consequently, the necessary modifications, and/or rephrasing, were done in line with pilot study results. At that time, tools were completed prepared for usage. The data attained from pilot study was involved in the existing research sample as no most important modifications were happened.

D. SD program phases: It was conducted throughout four phases: assessment; planning; implementation besides evaluation as subsequent:

Phase I: Assessment phase (Pre-test phase):-

- This phase was finished earlier implementation of SD program. It was conducted in maternity classes for academic third year at Faculty of Nursing, Tanta University.
- The entirely students were assessed by researchers using **Tool (I), Part 1;** in order to assemble their socio- demographic data. This took about 10 minutes. **While Tool (I**), **Part 2;** the students filled it by a self-report on an individual basis in the attendance of the researcher in nearly 15 minutes.
- **Tool (II); WEAS** was used for each student individually to assess their feeling, beliefs and behavior regarding women empowerment. This consumed nearby 15 minutes.
- **Tool (III); SCQ** also, was used for each student individually to evaluate their knowingness, attitude and behavior regarding SD in the presence of the researchers for any clarification. The time needed to fulfill this tool ranged from 20-30 minutes.

Phase II: Planning phase:

– Setting goal and objectives of the SD **program:**

- **The SD program goal was to** intensify maternity nursing students' perception **regarding SD**, women empowerment as well as maternal mortality.
- **The SD program objectives**:

- Define maternal mortality, women empowerment and SD.
- Explain historical background of SD
- Illustrate the proposed goals of SD.
- Diagram dimensions of SD (environmental, social and economic).
- Exemplify main SDGs for maintaining women.
- Describe the domains of women empowerment.
- Determine Obstacles of women empowerment in the light of SD
- Interpret the role of SDGs and women empowerment for the reduction of maternal mortality.

- **The SD program development:**

- The content of the **SD** program was selected by the researchers centered on the students' needs (findings of assessment phase), in addition program objectives guided by relevant literatures. Moreover, it was distributed to the students to enrich their knowledge, attitude and behavior regarding **SD** as well as women empowerment. **SD** program were entailed two main parts:

Part 1: Historical background of SD: It included ***knowledge regarding Millennium Developmental Goals (MDGs)****;* definition, proposed MDGs, aim of MDGs, challenges for achieving MDGs as well as international and Egypt progress toward MDGs. Additionally, ***knowledge regarding SD 2030;*** SD definition, aim of SD, proposed SDGs, dimensions of SD

(environmental, social and economic), women and SDGs, national and international challenges for SDGs as well as Egypt efforts toward achieving SDGs.

Part 2: Women Empowerment and SD contribution for reduction of maternal mortality: It included ***knowledge regarding women empowerment;*** definition of women empowerment, importance of women health and empowerment, factors affecting women's health, women's health at different stages of life (adolescence to menopause), women rights in light of SDGs, as well as SD strategies for women health and empowerment. Moreover, ***knowledge regarding maternal mortality;*** definition of maternal mortality, statistical profile/indictors for the maternal mortality, risk factors of maternal mortality, causes of maternal mortality, as well as maternity nurses' contribution for reduction of maternal mortality.

– Various teaching methods were utilized to conduct the SD program by way of lecture; group discussion; brainstorming; power point presentation; as well as scenario-based situations regarding SD.

Phase III: Implementation phase: -

– The total numbers of entirely maternity nursing students (100 students) were allocated into four subgroups; each subgroup involved 25 students. They obtained the **SD** program within two consecutive days / week for two weeks. The **first week** included the ***first part*** regarding the **historical background of SD** that was presented by the researchers into two sessions. The **second week** included the ***second part*** regarding **women empowerment and SD contribution for reduction of maternal mortality** that was offered also, by the researchers into two sessions at maternity students' classes. The duration of each session extended from 45 minutes to one hour.

– **The SD sessions were as the following:**

1) The first session; its aim was to provide the maternity nursing students with the basic general knowledge regarding **MDG**; definition, proposed **MDGs**, aim of **MDGs**, challenges for achieving **MDGs** as well as international and Egypt progress toward **MDGs**. In addition to, demonstrating examples of environmental, social and economic sustainability.

2) The second session; its aim was to deliver the maternity nursing students with the basic knowledge and practical skills regarding SDG**s**; definition, proposed 17 SDG**s**, aim of SDG**s**, dimensions of SD (environmental, social and economic), women and SDG**s**, national and international challenges for achieving SDG**s** as well as Egypt efforts toward achieving SDG**s** and also demonstrating scenario-based situations on SDG**s**.

The third session; its aim was to afford a brief orientation regarding women health, rights and empowerment; definition of women empowerment, importance of women health and

empowerment, factors affecting women's health, women's health at different stages of women life, women rights in light of SDGs, and SD strategies for women health and empowerment. In addition, carrying out brainstorming to solve problems associated with sustainability and women health.

3) **The fourth session;** its aim was to enhance the nursing students' knowledge and practical skills regarding definition of maternal mortality, statistical profile/indictors of maternal mortality, risk factors of maternal mortality, causes of maternal mortality, as well as demonstrating health scenario for maternity nurses' contribution for reduction of maternal mortality.

Phase IV: Evaluation phase (Post-test):

Assessment of maternity nursing students' knowledge regarding women empowerment and maternal mortality (**Tool (I); part two**); WEAS (**Tool (II)**); in addition to SCQ (**Tool (III)**) were assessed three times; before and immediately post in addition to follow up with one month after the implementation of the SD training program in order to ascertain the effect of the program on maternity nursing students' perception toward SD; challenges for women empowerment and reducing maternal mortality.

Statistical analysis: The collected data were organized, coded, categorized, tabulated and statistically analyzed using IBM SPSS software package version 20.0. Qualitative data were described using number and percent. The Kolmogorov-Smirnov test was used to validate regularity of the distribution. Quantitative data were described using range (minimum and maximum); mean; standard deviation (SD); besides median. Significance of the obtained results was adjudicated at the 5% level.

Results

Table (1); Shows the distribution of maternity nursing students pertaining to their socio-demographic characteristics. It is observed that the students' age ranged from 21-24 years, with **Mean age ± SD** of 22.4 ± 1.3. As regards their marital status, the majority (88.0%) of them were single while the minority (12.0%) of them was married. Regarding the maternity nursing students sex, it was found that almost half (51% besides 57% respectively) of them were male and from the rural residence. In relation to attending previous training courses regarding SD, the entire sample (100%) of them, didn't attend whichever training courses concerning SD. Moreover, it was found that only (15%) of the studied students heard about SD and their source of information was the internet.

Table (2): Clarifies the distribution of maternity nursing students' according to their knowledge regarding women empowerment and maternal mortality. It was found that a highly statistically significant positive improvement of the maternity nursing students' knowledge regarding women empowerment and maternal mortality immediately and one-month post program implementation compared to preprogram implementation as $P < 0.05$. With regard to, the

total score level of the maternity nursing students concerning women empowerment and maternal mortality, the table also revealed that 12% of studied students had high level of knowledge regarding women empowerment and maternal mortality pre educational program implementation, amplified to 95% immediately afterward educational program implementation, although the percentage reduced to (89 %) one month later educational program implementation.

Table (3): Demonstrates the distribution of the maternity nursing students according to the women empowerment attitude domains. It was established that statistically significant progressive improvement of the students' attitude scores toward women empowerment immediately and one month later implementation of educational program compared to preprogram implementation.

Figure (1): Clarifies distribution of maternity nursing students' total score level of the attitude toward women empowerment pre as well as post educational program. It was observed that 27.5% of studied students had positive attitude concerning women empowerment pre-educational program implementation, improved to 90% immediately after educational program implementation, although the percentage reduced to 85% one month later educational program implementation.

Table (4): Clarifies distribution of the maternity nursing students pertaining to the different three knowledge dimensions of the SD. It was found that a statistically significant positive development of the students' knowledge scores immediately and one month later implementation of the educational program compared to preprogram implementation.

Figure (2): Shows distribution of the maternity nursing students' total score level of knowledge regarding SD pre and post educational program. It is revealed that 15% of studied students had high level of knowledge about SD pre-educational program implementation, improved to 95% immediately after educational program implementation, while the percentage reduced to (90 %) one month later educational program implementation.

Table (5): Illustrates distribution of the maternity nursing students according to the different three attitude dimensions of the SD. It was found that a statistically significant positive improvement of the students' attitude scores immediately as well as one month later implementation of educational program compared to preprogram implementation.

Figure (3): Displays distribution of the maternity nursing students' total score level of attitude toward SD pre as well as later educational program. It is found that 35% of studied students had positive attitude concerning SD pre-educational program implementation, improved to 98% immediately later educational program implementation, although the percentage declined to 92 % one month later educational program implementation.

Table (6): Illustrates distribution of the maternity nursing students according to the different three behavior dimensions of the SD. It was established that statistically significant positive improvement of the students' behavior scores immediately as well as one month later implementation of educational program compared to preprogram implementation.

Figure (4**):** Displays distribution of maternity nursing students' total score level of behavior toward SD pre as well as post educational program. It was observed that 30% of studied students had positive health behavior regarding SD pre educational program implementation, improved to 92% immediately later educational program implementation, although the percentage declined to 83 % one month later educational program implementation.

Table (7): Declares that a statistically significant positive correlation observed between the maternity nursing students' knowledge, attitude and behavior regarding SD pre and post program implementation (r = 0.541, P - value < 0.0001) (r = 0.255, P - value < 0.0001) (r = 0.279, P - value < 0.0001) (r = 0.218, P - value < 0.0001 & r = 0.127, P - value < 0.019), (r = 0.181, P - value <0.001) respectively.

Table (1): Distribution of maternity nursing students pertaining to their socio-demographic characteristics. (n=100)

Demographic characteristics	Studied maternity nursing students (n=100)	
	N	%
▪ **Age/years**		
– **21- < 22**	**18**	**18.0**
– **22- < 23**	**52**	**52.0**
– **23-24**	**30**	**30.0**
Range: 21-24 (Mean±SD): 22.4 ± 1.3		
▪ **Marital status**		
– **Single**	**88**	**88.0**
– **Married**	**12**	**12.0**
▪ **Sex**		
– **Male**	**51**	**51.0**
– **Female**	**49**	**49.0**
▪ **Residence**		
– **Rural**	**57**	**57.0**
– **Urban**	**43**	**43.0**
▪ **Previous training courses regarding SD**		
– **Yes**	**0**	**0.0**
– **No**	**100**	**100.0**
▪ **Hearing about SD**		
– **Yes**	**15**	**15.0**
– **No**	**85**	**85.0**
▪ **Source of information (n=15)**		
– **Internet**	**15**	**100.0**

Table (2): Distribution of maternity nursing students' rendering to their knowledge regarding women empowerment and maternal mortality pre, immediately and one-month post program implementation. (n=100)

Nursing students' knowledge regarding women empowerment and maternal mortality	Nursing students' knowledge						Chi-square	
	Pre		Immediately post		One month post			
	N	%	N	%	N	%	X^2	P-value
1. Definition of women empowerment								
Incorrect and didn't know	84	84.0	0	0	1	1.0	69.759	<0.001**
Correct and incomplete answers	9	9.0	4	4.0	9	9.0		
Correct and complete answers	7	7.0	96	96.0	90	90.0		
2. Definition of maternal mortality								
Incorrect and didn't know	67	67.0	4	4.0	10	10.0	68.558	<0.001**
Correct and incomplete answers	21	21.0	7	7.0	10	10.0		
Correct and complete answers	12	12.0	89	89.0	80	80.0		
3. Indicators of maternal mortality								
Incorrect and didn't know	12	12.0	2	2.0	8	8.0	58.73	<0.001**
Correct and incomplete answers	64	64.0	13	13.0	6	6.0		
Correct and complete answers	24	24.0	85	85.0	86	86.0		
4. Proposed SDG related to women								
Incorrect and didn't know	58	58.0	2	2.0	6	6.0	56.814	<0.001**
Correct and incomplete answers	24	24.0	3	3.0	6	6.0		
Correct and complete answers	18	18.0	95	95.0	88	88.0		
5. Factors affecting women health and empowerment								
Incorrect and didn't know	66	66.0	2	2.0	6	6.0	55.999	<0.001**
Correct and incomplete answers	14	14.0	8	8.0	10	10.0		
Correct and complete answers	20	20.0	90	90.0	84	84.0		
6. SD strategies for maximizing women empowerment and reducing maternal mortality								
Incorrect and didn't know	83	83.0	0	0.0	4	4.0	59.151	<0.001**
Correct and incomplete answers	10	10.0	4	4.0	11	11.0		
Correct and complete answers	7	7.0	96	96.0	85	85.0		
7. Role of nurse toward SD								
High level of knowledge	12	12.0	95	95.0	89	89.0	91.975	<0.001**
Moderate level of knowledge	24	24.0	5	5.0	6	6.0		
Low level of knowledge	64	64.0	0	0.0	5	5.0		
8. Obstacles of women empowerment in the light of SD								
Incorrect and didn't know	73	73.0	4	4.0	3	3.0	69.759	<0.001**
Correct and incomplete answers	20	20.0	3	3.0	10	10.0		
Correct and complete answers	7	7.0	93	93.0	87	87.0		
9. Sustainable women's rights								
Incorrect and didn't know	58	58.0	2	2.0	6	6.0	56.814	<0.001**

Nursing students' knowledge regarding women empowerment and maternal mortality	Nursing students' knowledge						Chi-square	
	Pre		Immediately post		One month post			
	N	%	N	%	N	%	X^2	P-value
Correct and incomplete answers	24	24.0	3	3.0	6	6.0		
Correct and complete answers	18	18.0	95	95.0	88	88.0		
10. Maternity nurses contribution in minimizing maternal mortality								
Incorrect and didn't know	84	84.0	0	0	1	1.0		
Correct and incomplete answers	9	9.0	4	4.0	9	9.0	69.759	<0.001**
Correct and complete answers	7	7.0	96	96.0	90	90.0		
Total score level of the maternity students' knowledge regarding women empowerment and maternal mortality								
High level of knowledge	**12**	**12.0**	**95**	**95.0**	**89**	**89.0**		
Moderate level of knowledge	**24**	**24.0**	**5**	**5.0**	**6**	**6.0**	**91.975**	**<0.001****
Low level of knowledge	**64**	**64.0**	**0**	**0.0**	**5**	**5.0**		

Table (3): Distribution of maternity nursing students' pertaining to the women empowerment attitude domains pre, immediately besides one month post educational program implementation. (n=100)

Women Empowerment Attitude Domains		The maternity nursing students attitude, and beliefs regarding women empowerment						Chi-square	
		Pre		Immediately post		After one month		X^2	P-value
		No	%	No	%	No	%		
Domain 1: Personal Freedom (Positive Items)	**Disagree**	67	67.0	4	4.0	10	10.0	82.576	<0.001**
	Neutral	21	21.0	7	7.0	10	10.0		
	Agree	12	12.0	89	89.0	80	80.0		
Domain 2: Equal Rights (Positive Items)	**Disagree**	12	12.0	4	4.0	8	8.0	91.975	<0.001**
	Neutral	64	64.0	4	4.0	6	6.0		
	Agree	24	24.0	92	92.0	86	86.0		
Domain 3: Women Empowerment Related Fears (Reverse Items)	**Agree**	58	58.0	2	2.0	6	6.0	86.605	<0.001**
	Neutral	24	24.0	13	13.0	10	10.0		
	Disagree	18	18.0	85	85.0	84	84.0		

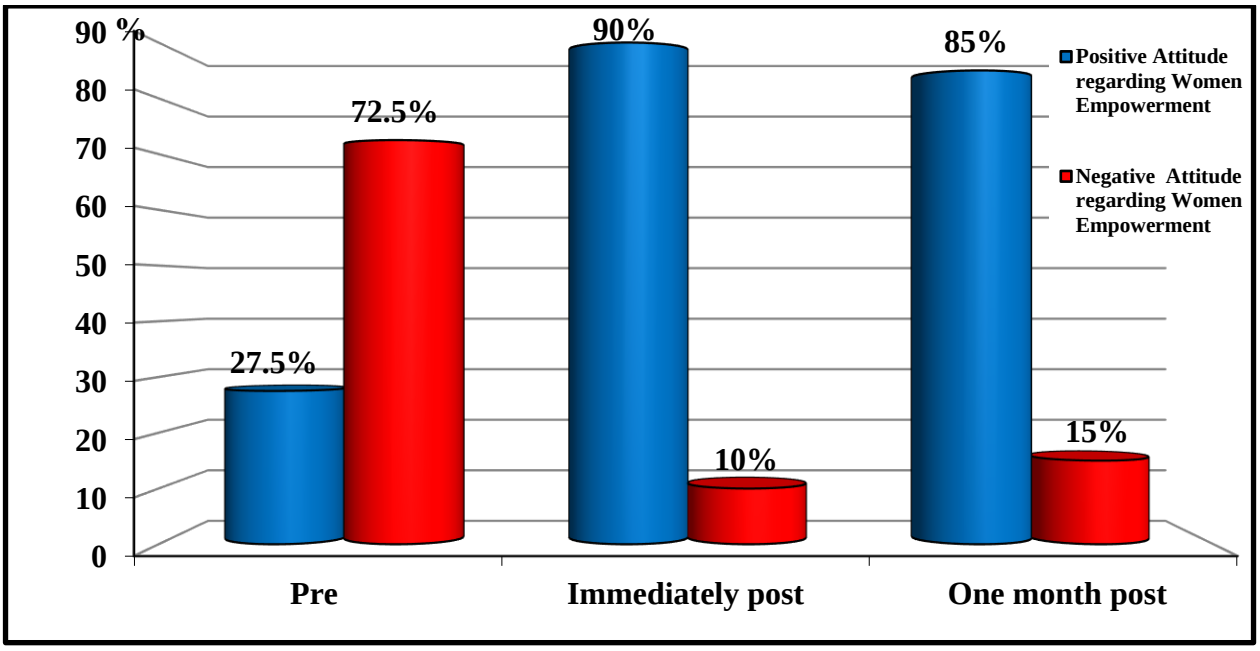

Fig (1): Distribution of the maternity nursing students relating to their total score level of attitude regarding women empowerment pre, immediately and one month post educational program implementation. (n=100)

Table (4): Distribution of maternity nursing students pertaining to the different three knowledge dimensions of the SD pre, immediately besides one month post educational program implementation. (n=100)

Sustainability Knowingness Questionnaire		The maternity nursing students knowledge regarding SD (n=100)						Chi-square	
		pre		Immediately post		After one month		X^2	P-value
		No	%	No	%	No	%		
Environmental	Disagree	64	64.0	2	2.0	5	5.0	69.759	<0.001**
	Neutral	24	24.0	3	3.0	10	10.0		
	Agree	12	12.0	95	95.0	85	85.0		
Social	Disagree	67	67.0	0	0.0	10	10.0	68.558	<0.001**
	Neutral	18	18.0	6	6.0	10	10.0		
	Agree	15	15.0	94	94.0	80	80.0		
Economic	Disagree	12	12.0	3	3.0	10	10.0	58.73	<0.001**
	Neutral	64	64.0	4	4.0	4	4.0		
	Agree	24	24.0	93	93.0	86	86.0		

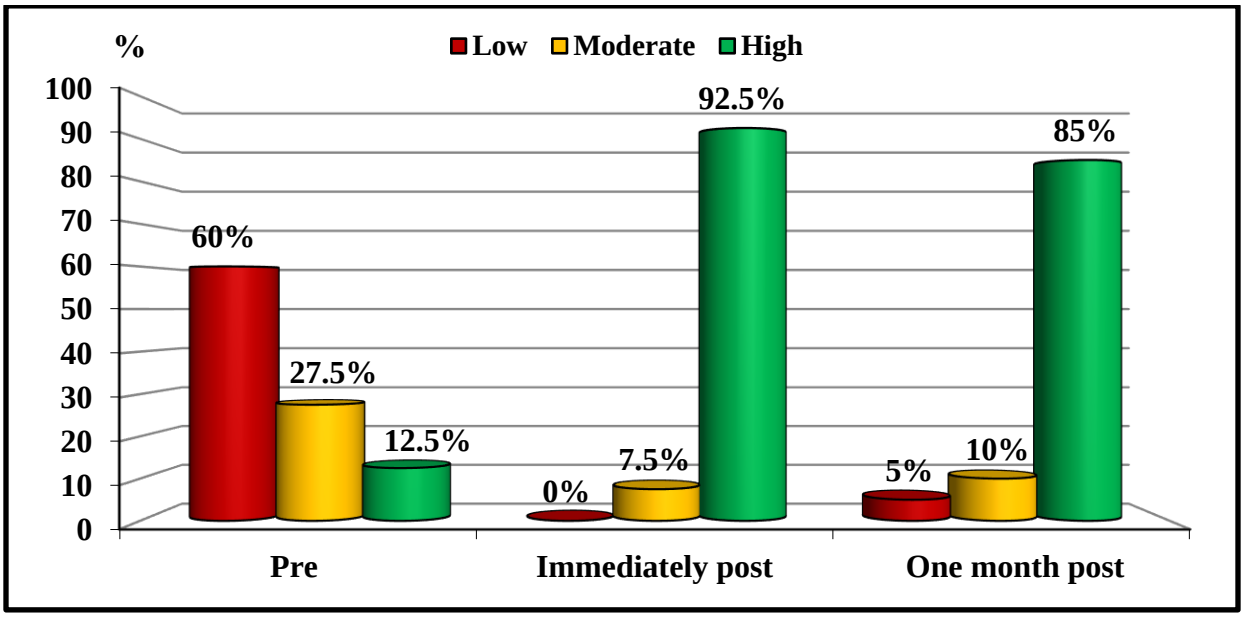

Fig (2): Distribution of maternity nursing students rendering to their total score level of knowledge regarding SD pre, immediately besides one month post educational program implementation. (n=100)

Table (5): Distribution of maternity nursing students pertaining to the different three attitude dimensions of the SD pre, immediately besides one month post educational program implementation. (n=100)

Sustainability Attitude Questionnaire		The maternity nursing students attitude regarding SD						Chi-square	
		pre		Immediately post		After one month		X^2	P-value
		No	%	No	%	No	%		
Environmental	Disagree	58	58.0	4	4.0	6	6.0	83.576	<0.001**
	Neutral	24	24.0	4	4.0	10	10.0		
	Agree	18	18.0	92	92.0	84	84.0		
Social	Disagree	67	67.0	4	4.0	10	10.0	90.975	<0.001**
	Neutral	21	21.0	7	7.0	10	10.0		
	Agree	12	12.0	89	89.0	80	80.0		
Economic	Disagree	12	12.0	2	2.0	8	8.0	80.605	<0.001**
	Neutral	64	64.0	13	13.0	6	6.0		
	Agree	24	24.0	85	85.0	86	86.0		

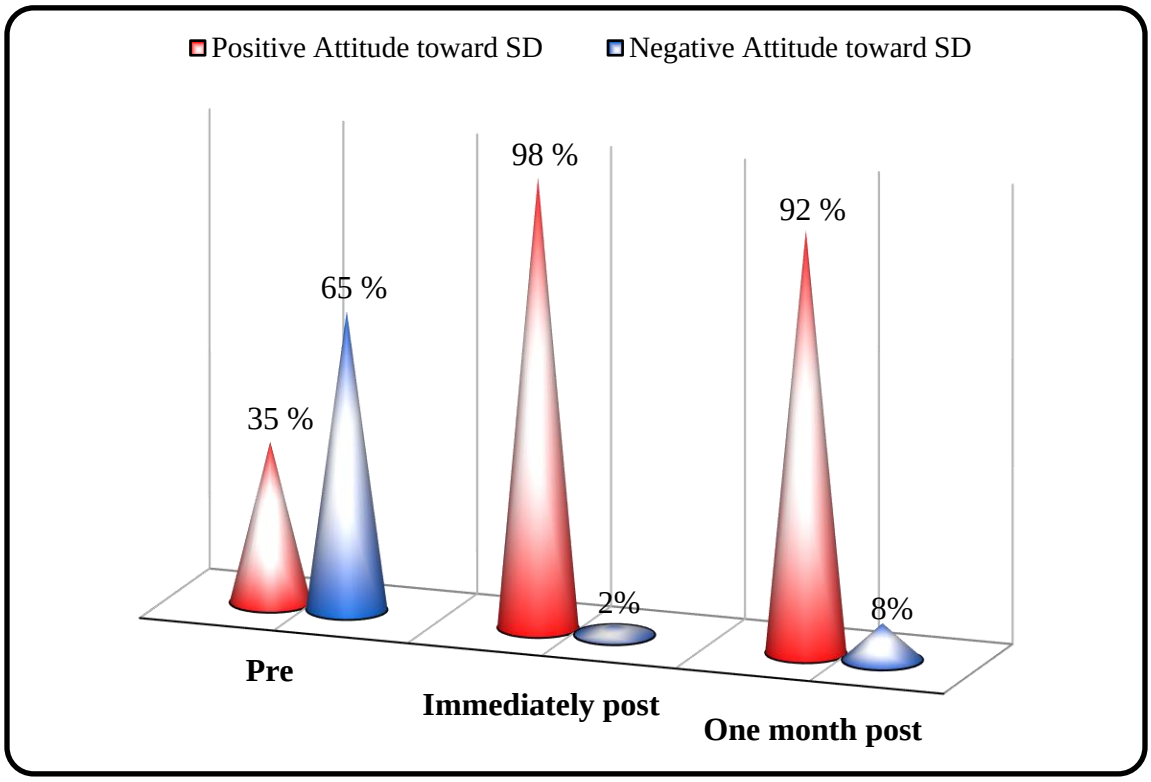

Fig (3): Distribution of maternity nursing students pertaining to their total score level of attitude concerning SD pre, immediately besides one month post educational program implementation. (n=100)

Table (6): Distribution of maternity nursing students pertaining to the different three behavior dimensions of the sustainability development pre, immediately besides one month post educational program implementation. (n=100)

Sustainability Behavior Questionnaire		The maternity nursing students behavior regarding SD						Chi-square	
		pre		Immediately post		After one month		X^2	P-value
		No	%	No	%	No	%		
Environmental	Disagree	67	67.0	4	4.0	10	10.0	88. 76	<0.001**
	Neutral	21	21.0	7	7.0	10	10.0		
	Agree	12	12.0	89	89.0	80	80.0		
Social	Disagree	12	12.0	4	4.0	8	8.0	93. 75	<0.001**
	Neutral	64	64.0	4	4.0	6	6.0		
	Agree	24	24.0	92	92.0	86	86.0		
Economic	Disagree	58	58.0	2	2.0	6	6.0	87.605	<0.001**
	Neutral	24	24.0	13	13.0	10	10.0		
	Agree	18	18.0	85	85.0	84	84.0		

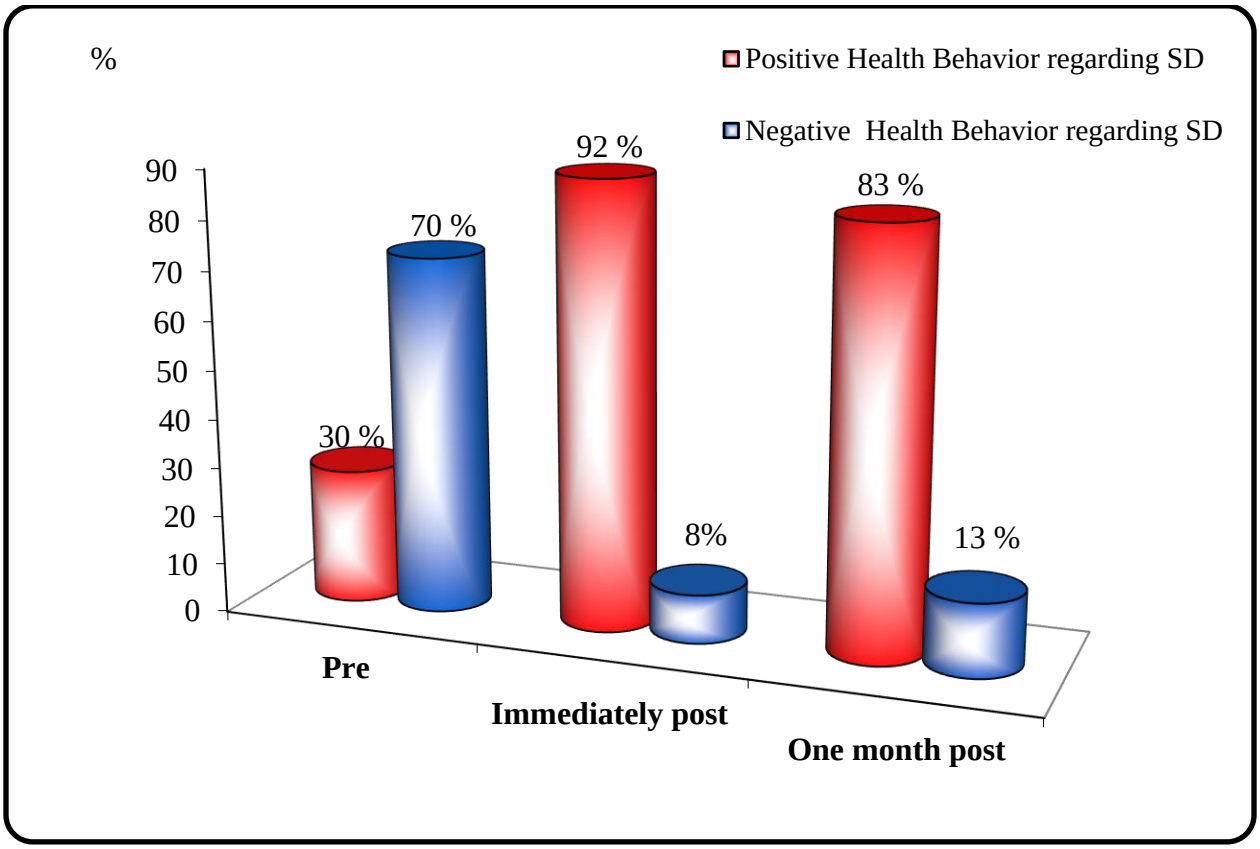

Fig (4): Distribution of maternity nursing students pertaining to their total score level of health behavior toward SD pre, immediately besides one month post educational program implementation. (n=100).

Table (7): Correlation matrix between knowledge, attitude, besides behavior of the maternity nursing students toward SD pre, immediately besides one month post educational program implementation. (n=100)

Items		Knowledge scores (pre)	Total attitude scores (pre)	Total Knowledge scores (Post)	Total attitude scores (Post)
Total Knowledgescores (pre)	R				
	P - value				
Total attitudescores (pre)	r	0.541			
	P - value	0.0001**			
Total behavior scores (pre)	r	0.255	0.279		
	P – value	0.0001**	0.0001**		
Total Knowledgescores (Post)	r				
	P – value				
Total attitudescores (Post)	r			0.218	
	P - value			0.0001**	
Total behaviorscores (Post)	R			0.127	0.181
	P – value			0.019*	0.001**

Discussion

Sustainable development (SD) addresses the demands of the present generation without sacrificing future generations' ability. Its specific focus has been on developing in nursing students the core sustainability competency of systems thinking, understanding the inter-connections among their occupational goal of supportive healthy living and the global issue of maternal health including woman empowerment and reduction of maternal mortality **(Aronsson, Nichols, Warwick, & Elf, 2023**). Education is seen as an instrument of empowerment that may assist individuals in achieving sustainable development and in making critical decisions in support of social justice, environmental preservation, besides economic viability for together the present and the future. Furthermore, some vital visions can be gained from the prosperity of the international research into the more general field of Higher Education for Sustainable Development (HESD) **(Richardson, Clarke, Grose, & Warwick, 2019; Chinnathurai, 2022)**. Traditionally, within higher education, there have been limited researches of sustainability in nursing. Similarly, in Egypt, there is a lake of sustainability researches in nursing. Hence, the aim of this research was to evaluate the effect of educational program on maternity nursing students' perception toward sustainability development; challenges for women empowerment and reducing maternal mortality.

Concerning, the research subjects socio-demographic characteristics; it was observed that the maternity nursing students' age ranged from 21-24 years, with Mean age ± SD of 22.4 ± 1.3. While almost half of them were male as well as from rural residence. This is in contradict with **Elshall, Darwish, & Shokry, (2022)** who reported that the majority of the students were female. It may be clarified by the statistic that our college is considered an ancient in taking male student. These results might be also, explained by the rising number of male students who are enrolling in nursing programs as a result of the advantages of working in the human services field, including its high salary, job tasks, and ability to help others. **Gurgen Sims, & Erkin, (2022),** said that more than half of the participants in their study, stated not hearing of the SD concept before and three quarters of them did not know about SDGs. Specifically, in this regard, all the entire sample who participated in this research did not attend any training courses regarding SD, however only fifteen of them heard about SD and their source of information was the internet. This could be attributed to the fact that the internet, the most popular medium for communication, knowledge acquisition, and search, is also the language of the modern era **Elshall, Darwish, & Shokry, (2022)**.

Concerning maternity nursing students' knowledge regarding women empowerment and maternal mortality, the finding of the current research revealed that minority of the studied students had high level of knowledge regarding women empowerment and maternal mortality pre-educational program implementation. It is not astonishing; it may be

endorsed to the statistic that they did not attend any training courses regarding SD which concerned on women empowerment and maternal mortality. This finding is matches with **Sakhardande, Biju, Shinde, & Shaikh, (2022),** who found that more than one quarter of the participants had good knowledge on women's empowerment. On the other hand, these results are in contrast with **Al-Qahtani, Elgzar, & Ibrahi, (2021)**, who investigated predictors of women empowerment knowledge and attitude among Saudi academic and administrative staff: A cross-sectional study. Their results showed that more than three-quarters of participants had good knowledge regarding women empowerment. This discrepancy may be related to the fact that the participants within the preceding research were postgraduate staff and may attended periodic training courses regarding women empowerment. On the other hand, the existing research figured out a highly statistically significant positive improvement of the maternity nursing students' knowledge regarding women empowerment and maternal mortality immediately and one-month post program implementation. These results were expected and are also consistent with what is found in the literature by **Janbani, & Osmani, (2023).** Where the educational intervention should result in an increase in students' knowledge base. Moreover, improving maternal health and wellbeing and lowering maternal mortality require broadening the health sector ecosystem to mitigate maternal health determinants and adjusting the structure of health systems to counteract the negative effects of eco-social forces, including through increased access to quality-assured sustainable services **Souza et al., (2024).**

Concerning maternity nursing students' total score level of attitude toward women empowerment; it was observed that extra than one quarter of the studied students had positive attitude regarding women empowerment pre educational program implementation. This may be elucidated by the statistic that almost half of studied students were male; they may hold traditional beliefs about gender roles and may not see the need for women to have equal rights and opportunities as mentioned by **Jagne, (2023).** On the contrary, **Devi, & Chanu, (2022),** in their research, stated that the majority of the respondents in their study (64%) had favorable attitude concerning women empowerment. Moreover, **Al-Qahtani, Elgzar, & Ibrahi, (2021)** in their research, reported that the total women empowerment attitude was positive among two-thirds of the participants. These previous researches discrepancy with the outcome of the existent research may be attributable to diverse educational program or diverse socio-demographic factors of the research subjects. In spite of that, the existing research clarified out extremely statistically significant positive improvement of the maternity nursing students' attitude toward women empowerment immediately and one month post program implementation. This can be explicated by the effect of the educational program for reshaping their attitude toward women's empowerment as a

crucial goal in attaining sustainable development worldwide **Batool, & Afzal, (2021).**

Concerning maternity nursing students' total score level of knowledge regarding SD. The current research revealed that less than one fifth of the studied students had high level of knowledge about SD pre educational program implementation. At the same line, the research finding is intelligible with the findings of the research conceded out by **Anåker, Spante, & Elf, (2021)**. Their research found that sustainability was difficult to apply besides suggested that more instruction is necessary. The similarity between the preceding studies and the outcome of the existent research may stem from presumption that nursing students are still learning about the concept of SD. Furthermore, there was no information on this topic in their nursing curriculum. In a similar vein, most of them stated that they had not heard of SD, which could have been brought on by the stress and workload associated with the nursing studies. As a result, there was no time to attend any training sessions or workshops on SD. However, the research finding is in incoherent with the findings of the research conceded out by **El-Razek, Awed, & Ashour, (2023).** Their findings specify that maternity nursing students were knowledgeable about SD objectives. This discrepancy may be related to the fact that the participants within the later research is that students learn most of what they recognize regarding the SDGs in formal education and must pass a final test. ***Pertaining to immediately and one month post educational program implementation;*** the existing research figured out that there was a statistically significant positive improvement of the students' knowledge scores about SD. In the same context, **Saleh, & Elsabahy, (2022)** and**, Elshall, Darwish, & Shokry, (2022)** exposed a extremely significant improvement in wholly-diverse items of three knowledge dimensions of (Environmental, social, and economics) among the study group post intervention. From the researcher point of view, these improvements resulted from the effect of SD education intervention, as the program enrich students with the concept of SD and its related items. Additionally, the educational intervention determined the significance of implementing sustainability in the healthcare industry, which inspires nursing students to apply SD.These observations is in accordance with the findings of the review conducted by **Aronsson, Nichols, Warwick, & Elf, (2023)** which indicate that sustainability education can enhance student awareness and knowledge.

Concerning maternity nursing students' total score level of attitude toward SD. The exsisting research findings revealed that almost one third of the studied students had positive attitude regarding SD pre educational program implementation. This finding is supported by **Elshall, Darwish, & Shokry, (2022)**; as all students had poor attitude regarding sustainability among study participants. In the same context, **Felicilda-Raynaldo et al. (2018)** discovered that less than one fifth of students expressed a positive view towards climate change. The researchers hypothesized that the lack of climate change as

well as SD education in the area's nursing curriculum may be the cause of these divisive responses. On the other hand, these results are inconvenient with **Balamuralithara, Fumihiko, Hidekazu, & Kanemitsu, (2020)** in their research to determine the perceptions and attitudes towards sustainable development among Malaysian undergraduates implied that the Malaysian students have favorable attitudes regarding SD, mainly when it emanates to environmental concerns. This discrepancy may be attributed to the statistic that the students within the aforementioned studies received most of their information about the SD from formal education and will have final test exam. While the only fifteen of students in the current research heard about SD and their source of information was the internet. ***Concerning to immediately and one month post educational program implementation;*** the existing research figured out that there was a statistically significant positive improvement of the students' attitudes scores about SD. In the same context, **Ahmed & Faiyez (2023).,** showed in their research that, the majority of nursing students had poor attitudes prior to the implementation of the SDGs program, but their attitudes noticeably improved afterward. Moreover, these similarities with finding of the current research are confirmed by **Shaw et al., (2021); Otto et al., (2020);** who asserted that education plays a major role in achieving the SDGs. Therefore, the main focus of nursing education must be on training aspiring nurses how to provide healthcare that is sustainable.

Regarding maternity nursing students' total score level of behavior toward SD. The current research findings revealed that less than one third of the studied students had positive health behavior regarding SD pre-educational program implementation. In the identical context, **Elshall, Darwish, & Shokry, (2022),** pre-intervention revealed that the majority of students had poor behavior among both groups specifically economic dimension interrelated to sustainability behavior. This can be explained by that the students were not familiar with the fundamental ideas of SD. They were badly-prepared to manage climate change and implement the objectives of SD, failing to understand their roles and responsibilities in relation to sustainability and behavior accordingly. ***Pertaining to immediately and one month post educational program implementation;*** the existing research figured out that there was statistically significant positive enhancement of the students' behavior scores about SD. This results matches with **Elshall, Darwish, & Shokry, (2022)** who revealed a higher mean score of nursing students' knowledge, attitude and behavior towards SD post-intervention for the study group. This could be explianed by the content of education program featured a variety of circumstances and issues that call for long-term solutions. As a result, these improve students' ability to think critically and solve problems. According to the study's findings, their behavior and attitude had therefore significantly improved. While this result differs with **Borges (2019),** who disclosed that

the outcomes demonstrated the presence of extremely positive attitudes and knowledge regarding SD. Behaviors turned out to be less favorable than the other two dimensions of SD.

The current research illustrated that a statistically positive correlation between the maternity nursing students' knowledge and attitude regarding SD pre-program implementation. Moreover, a statistically positive correlation was observed between the maternity nursing students' attitude and behavior regarding SD pre-program implementation. These findings also in accordance with the outcomes of **Ahmed, Ali, & Faiyez, (2023)** in their study to determine the effect of educational program on knowledge, attitude and practice of nursing students toward SDGs. The existing research declares also, that a statistically significant positive correlation between the Maternity nursing students' knowledge with attitude as well as behavior concerning SD post program implementation, besides between attitude as well as behavior concerning SD post program implementation. This could be indorsed to the fact that education and training led to the development of individual consciousness, which may have affected their perspectives or attitude as well as behavior. However, **Afroz, & Ilham, (2020),** contradict the existing research in the regard of the correlation of students' knowledge and behavior. They found a negative correlation among students' knowledge of as well as behavior regarding SDG. This can be elucidated by that despite knowing the objectives well, they are not exercising them enough. Hence, nursing students must be prepared to contribute to sustainable maternal healthcare and society in a world where woman empowerment is a reality. The opinions as well as experiences of students are essential to the ongoing improvement of the education **(Sperstad et al., 2020).** Likewise, **Aronsson, Clarke, Grose, & Richardson, (2020),** emphasized that change management and sustainable development can be implemented by nurses with the support of continuous sustainability training. So, based on the findings of the present study, the research hypotheses have been achieved after implementation of the educational program on maternity nursing students' perception toward sustainability development; challenges for women empowerment and reducing maternal mortality, this was revealed through the significant improvement of maternity nursing students' perception immediately and one month later compared to preprogram implementation.

Conclusion:

Based on the findings of the present study, it can be concluded that:

- The research hypotheses have been achieved after implementation of the SD program which was effective at enhancing the maternity nursing students' perception toward SD and its relation to women empowerment, as well as maternal mortality which translated into higher knowledge, attitude, and behavior scores.

Limitations

- SD program implementation phase was affected by maternity nursing students'

absence from the sessions. Accordingly, the researchers dedicated more time and effort for repeating the sessions several times.

Recommendations

- Continuous SD program and workshop would be carried out for all nursing students to advance and refresh their knowledge, practice, in addition to attitude.
- Interpret the professional nursing role of SD and women empowerment for the reduction of maternal mortality in the faculties' core curriculum through diverse strategies of education.

Further researches

- Relation between SD and diverse maternity nursing focuses.
- Impact of SD educational intervention on occupied nurses' performance toward women health and empowerment.

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