Knowledge of Nursing Students toward Gender Equality for Women Empowerment As selected Sustainable Development Goal

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Abstract

Background: Gender equality and women's empowerment are critical elements for achieving inclusive and equitable healthcare. As future healthcare professionals, nursing students must be equipped with sufficient knowledge in these areas to deliver patient-centered care and contribute effectively to global health equity. **Aim**: This study aimed to assess the knowledge of nursing students regarding gender equality and women's empowerment as a selected Sustainable Development Goal (SDG). **Research design:** A descriptive research design was utilized. **Setting:** The study was conducted at the Faculty of Nursing, Minia University. **Sample:** The sample included all third-year nursing students (n = 955), of both genders, who had studied the "Women's Health and Obstetrics" course. **Tools of data collection:** Two main tools were utilized: 1. A demographic data form. 2. The Sustainability Knowledge Questionnaire (SKQ). **Results:** The findings revealed that, (57.4%) of students have good level of total knowledge for women empowerment as selected sustainable development goal, followed by (35.1%) of them have fair level and finally, (7.5%) have poor level of knowledge for women empowerment as selected sustainable development goal. A statistically significant relationship was found between students' socio-demographic characteristics and their level of knowledge—except for age ($p = 0.083$).**Conclusion:** The study concluded that while students generally recognize the importance of gender equality and women's empowerment, gaps remain in their comprehensive understanding and ability to apply this knowledge in practice**. Recommendations:** It is recommended to organize ongoing educational workshops, seminars, and interactive discussions on gender-related topics within healthcare education to enhance awareness, critical thinking, and engagement among nursing students.

Keywords: Gender Equality, Knowledge, Nursing Students, Sustainable Development Goal, Women Empowerment.

Introduction

The pursuit of the united nation (UN Sustainable Development Goals (SDGs) is no exception to the rule that knowledge is the foundation of all change initiatives. This section covers research on knowledge production, with an emphasis on how to enhance approaches to measuring and assessing sustainability and development initiatives **(Cummings et al., 2018).**

Egypt's Vision 2030 is a move toward inclusive development, with social justice, sustainable development (SD), and a well-balanced geographic and sectoral expansion as the main economic objectives to achieve welfare and prosperity. Education, the environment, society, and the economy are all addressed by the (SDGs) (**Pakkan, 2022)**.

The SDGs are a set of Seventeen interrelated global objectives that were developed as a roadmap (plan) to help everyone have a better, more sustainable future. Hunger and poverty won't exist, and there will be sustainable cities and communities, responsible consumption and production, climate action, peace, justice, life on land and below the ocean, excellent education, gender equality, access to clean energy, decent work and economic growth, business, innovative

infrastructure, a decrease in inequality, and strong institutions. **(Cutter, 2020).**

Developing graduates with a solid grasp of sustainable development is one of the main responsibilities of the university system. On the basis of that rationale, academic institutions have started offering courses on sustainable development to assist students in addressing social, economic, and environmental concerns both domestically and internationally. The educational system might help solve many of the problems that people encounter and create a sustainable future **(Thomas, 2020)**.

One of the most important instruments for increasing public knowledge of all environmental issues in a framework that considers not just environmental issues but also economic, social, political, and ethical issues is education for sustainable development (ESD). Disseminating information on sustainable development and its sub-dimensions should be the responsibility of numerous fields and organizations **(Tekbiyik & Celik, 2019)**.

Sustainable development requires gender equality and women's empowerment, however attaining these goals is challenging due to a number of obstacles. To overcome these obstacles and successfully manage goals and objectives, a strategic management tool is needed. In order to facilitate the strategic management of objectives and indicators associated with the fifth sustainable goal (SDG 5), which is suggested by the 2030 Agenda for Sustainable Development, this project intends to adapt the Balanced Scorecard (BSC), a strategic management tool for gender equality **(Valduga et al, 2023).**

Also, Women's involvement in economic decision-making, household buying decision-making, and freedom of mobility are important indicators of their empowerment **(Sharma, 2015).** When someone is empowered, they can take charge of their life, recognize their needs, and take action to meet them.

Ensuring widespread access to sexual and reproductive health care services is a fundamental aspect of the right to sexual and reproductive health. Numerous studies demonstrate that advancements in sexual and reproductive health and rights (SRHR) support economic expansion, the eradication of poverty, educational advancement, the reduction of inequality, and environmental sustainability **(Petersen, 2024).**

Equal Rights to Economic Resources: Laws that restrict women's access to economic possibilities are present in nine out of 10 nations worldwide. Access to land, natural resources, and other types of property, like land ownership, boosts people's capacity to generate revenue and promotes economic empowerment. **(Talukder et al, 2024).**

In spite of the fact that **information and communications technology (ICT)** promotes gender equality and women's empowerment, the percentage of women who use the internet worldwide is 5.9 percentage points lower than that of men **(Mackey& Petrucka,2021**).

Women's opportunities to acquire critical digital communication and problem-solving abilities are increased by digital inclusion. Nonetheless, it necessitates vital infrastructure, financial support, cooperation from stakeholders, access to education and digital literacy, as well as online and offline safety and security procedures **(Samosir et al., 2020).**

Promoting Gender Equality through Policies and Law: Including gender equality measures in budgeting and strategic planning encourages fair laws and policies. Transparency and accountability are strengthened by governments that set up an all-encompassing framework and make gender equality allocations public **(Valduga et al., 2023).** Thus, it is crucial to keep an eye on the percentage of nations that have mechanisms in place to track and allocate government funds for women's empowerment and gender equality (Indicator 5) **(Ferguson et al, 2024).**

Gender parity and fair education: Making life meaningful for everyone is a core tenet of the SDGs, as stated in the United Nations' 2030 Agenda. As a result, SDG 4 requires governments to guarantee that "all people, irrespective of sex, age, race, color, and ethnicity" as well as "persons with disabilities, migrants, indigenous peoples, and children and youth, especially those in vulnerable situations or other status, gain access to inclusive, equitable, quality education and lifelong learning opportunities." **(Monaco, 2024).**

Significance of the Study

The teaching of nursing must include understanding of sustainable development. In addition to addressing the factors that affect health, SD understand offers suggestion for the actions that maternity nurses must implement. Both determining the extent to which students are aware of this issue and addressing it in nursing education are crucial (**Barth et al., 2020**).

From the researches view maternity nurses work to promote the health of expectant mothers, students studying maternity nursing should take

lectures and exams on sustainable development. Nursing faculties will intend to investigate how its nursing students felt about the plan after it was implemented. Therefore The Faculty of Nursing at Minia University will include sustainable development into the curriculum as part of its efforts to increase the knowledge about it.

Aim of the study

The aim of the present study was to:

Assess knowledge of nursing students toward gender equality for women empowerment as selected sustainable development goal**.**

Research questions

The research questions that guide this study were:

- What is the level of knowledge of nursing students toward gender equality for women empowerment as selected sustainable development goal**?**
- What are the relationships between Knowledge of nursing students toward gender equality for women empowerment as selected sustainable development goal**,** and how does this relationship vary based on demographic factors, of the students?

Subject and methods:

Design of a current study

To accomplish a goal of the current Study, a descriptive research design was utilized.

Setting of the study

The study was conducted at the Faculty of Nursing, Minia University.

Sampling:

Sample type: A convenient sample was used in this study.

Sample size: The sample included all third-year nursing students (n = 955), of both genders, who had studied the "Women's Health and Obstetrics" course (2023-2024)

Data Collection Tools:

Two main tools were included as

Tool I: Concerned with students demographic characteristics as age, gender, location of residence, marital status, Hearing about SD and Source of information.

Tool II: Sustainability knowledge Questionnaire (SKQ), to assess students' knowledge of SD. It was adopted from **Canadian Audit & Accountability Foundation, 2017 and Gericke et al. (2018)**.

It included (50) items have 3 dimensions as:

- **Environmental (8 items) such as:** Improve access to clean water, better sanitation, and improve of access energy sources, and improve access to school safely…etc.
- **Social (27 items) as:** Improve sexual as well as reproductive health, decrease gender discrimination**,** and reduce the global maternal mortality ratio…etc.
- **Economic (15 items) such as:** Reduce poverty of both genders**,** end hunger for both genders, and improve rates of employment in the formal sector for women…etc.

On a 5-point Likert scale ranging from strongly disagree to strongly agree, the study sample scored their responses to the SKQ issues as follows: 1 strongly disagree - 2 disagree -3 neutral - 4 agree - 5 strongly agree.

Scoring system

The scoring system was divided as following table

Table (1): The scoring system of Sustainability knowledge Questionnaire

	No. of items	Poor knowledge (<50)	Fair knowledge (50-<75)	Good knowledge ≥75
• Environmental dimension	8	8-19	20-29	30-40
• Social dimension	27	27-66	67-100	101-135
• Economic dimension	15	15-36	37-55	56-75
Total Sustainability	50	50-124	125-186	187-250

Validity and Reliability of tools

Validity

The instruments were tested for the content validity by a jury of five experts in the field of women health and obstetrics nursing department who was review the tools for clarity, pertinent, comprehensiveness, understanding, relevance, applicability and easiness and vital modifications was done.

Reliability

The tools' consistency was verified by reliability testing. The degree to which the tools' items measured what they were supposed to measure was determined by measuring the internal consistency.

Also, the parts of the tools (environment, Society, and economic dimensions) were examined for dependability using the Cronbach alpha test, which showed that the scales had good internal reliability; they were then dispersed as follows: -

Table (2): Reliability of the tool

	Cronbach's test
• **Environmental dimension**	0.904
• **Social dimension**	0.959
• **Economic dimension**	0.939
Total Sustainability	0.884

Pilot Study:

A pilot study was applied on 10% (95) from total sample of the students to test feasibility of tools and time required to be applied. The sample of pilot study was involved to the total sample as no modifications were done on items of the questionnaire .

Data collection procedure

- The permission was taken from the ethical committee and the dean of faculty of nursing.
- Post analyzing the literature that was available on the research topic, it was take roughly two month to completed, starting from the beginning of March to the end of May 2024.
- Approval was obtained from the head of women health and obstetric and the pediatric departments.
- An Arabic translation of the data collection instruments has been made.
- Questionnaire was distributed to pediatric department students who were studied women health and obstetric course on first term before and after lectures on Sundays.
- Questionnaire was distributed to women health and obstetrics department students who already studied women health and obstetric course before and after lectures on Mondays.
- The investigator presented herself for the students and discussed the objectives of the study in details and obtained oral agreement from each subject answering students' questions related to the questionnaire.
- The investigator distributed the sheet to the participants and ensured that all questions were answered. Then explained each item of the tool clearly.
- The data gathering instrument was send to the sharing students to be filled out through a self-administered questionnaire.
- The instrument was requiring about 15 min to be filled out.
- The period time for data gathering was between from March to May 2024, or around two months.

Ethical considerations:

- The dean of Minia University's Faculty of Nursing gave his approval to conduct the study, and the research ethics committee issued an official letter approving it.

- After outlining the nature and goal of the study, students who were willing to participate gave their oral consent prior to the performance of both the pilot and main studies. The study participant is free to decline participation or to leave the study at any moment without providing a valid reason. Privacy of study participants was taken into account as data was being collected. Participants received guarantees that all of their information would be kept completely private. To further secure their privacy, each student was given a number rather than their name.

- The study did not conflict with religious, cultural, or traditional issues.

Statistical design

Version 22 of the statistical software for social science (SPSS) was used to examine the data. The mean and SD were used to express numerical data. Frequencies and percentages were used to express quantitative data. For quantitative data, the t-test was used to compare the means of two variables, and the ANOVA test was used to compare the means of more than two variables. Additionally, Pearson correlation was used to investigate the relationships between various numerical variables. Less than 0.05 was regarded as a significant probability (p-value), and less than 0.001 as a highly significant one.

Data processing and analysis:

The collected data was tabulated, computerized, analyzed and summarized by using descriptive statistical tests to test research questions by using SPSS version (25). Qualitative data were presented as frequency as well as percentage. The degree of significance is indicated by the probability (P-value); a value of less than 0.05 was deemed significant. Less than 0.001 was regarded as highly significant (**), and the lesser the P-value, the more significant the result (*). To examine the relationship between two variables, use the T test. T test for investigate the relation between two variables.

Also, to ascertain the kind and strength of a relationship between two numerical variables, the statistical approach of correlation is employed. The co-sign efficients show whether the relationship is positive or negative, and the value shows how strong it is. A weak correlation is indicated by a Rho value less than 0.25, a reasonable connection by a value between 0.25 and 0.499, a moderate correlation by a value between 0.50 and 0.74, and a strong correlation by a value greater than 0.74.

Limitation of the study

1. The study was applied in a specific geographic and institutional context, which may limit the generalizability of the findings to nursing students in other regions, countries, or educational systems.
2. The study relied on self-administered questionnaires, which may be subject to social desirability bias.
3. The study used quantitative methods only. Including qualitative interviews or focus groups could have provided deeper understanding of students' perspectives and experiences regarding gender equality and empowerment.
4. Differences in exposure to gender-related content across academic years or between institutions were not fully explored, which may have influenced students' knowledge levels.

Results of the study

Table (1): Frequency distribution of students socio-demographic characteristics (no.=955).

Students socio-demographic data	no.= 955	
	no.	%
Age / year		
● 15- <20	75	7.9
● 20- <25	874	**91.5**
● 25- 30	5	0.5
● >30	1	0.1
Mean ± SD	**21.7344+1.00132**	
Gender		
● Male	449	47.0
● Female	506	**53.0**
Area of residence		
● Rural	633	**66.3**
● Urban	322	33.7
Marital status		
● Married	26	2.7
● Single	929	**97.3**

Table (1) shows that (91.5%) of students' age ranged from 20 to <25 years old with mean± SD (21.7344+1.00132), Also (53%) of them are females. Concerning the area of residence there are (66.3%) of them are living in the rural area, and (97.3%) of them are single.

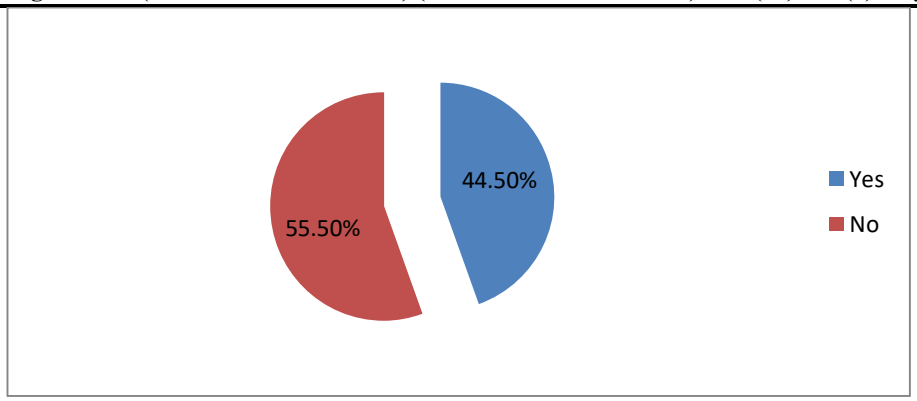
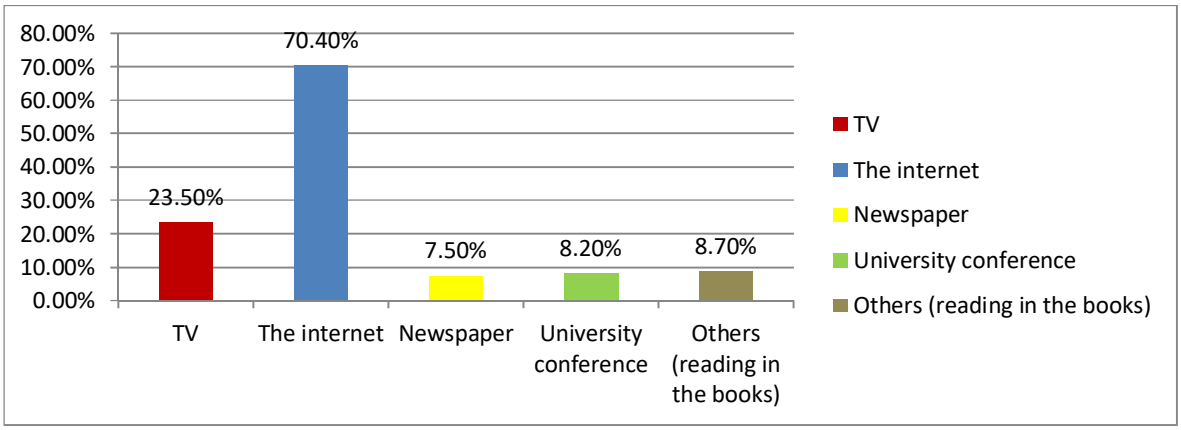


Figure (1): Frequency distribution of students hearing about sustainable development (no.=955).

Figure (1) shows that (44.5%) of students are hear about sustainable development, also (55.5%) of them aren't hear about sustainable development.



#= More than answer

Figure (2): Frequency distribution of students source of information about sustainable development (no.=955).

Figure (2) reveals that (70.4%) of students have information about sustainable development from internet, fellow by (23.5%) of them have information about sustainable development from TV and (8.7%& 8.2%) of them have information about sustainable development from reading in the book and university conference.

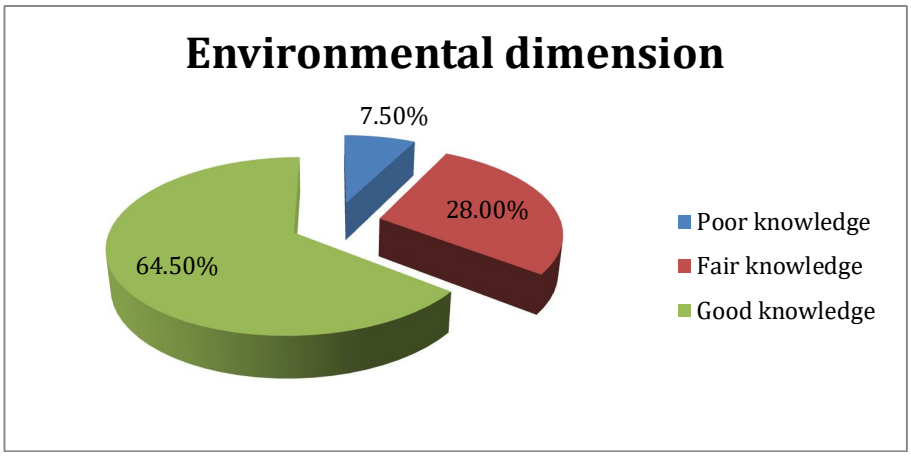


Figure (3): Total students' knowledge for environmental dimension of women empowerment as selected sustainable development goal (no.=955).

Figure (3) illustrates that, (64.5%) of students have good level of total knowledge for environmental dimension of women empowerment as selected sustainable development goal, followed by (28%) of them have fair level and finally, (7.5%) have poor level of knowledge for environmental dimension of women empowerment as selected sustainable development goal

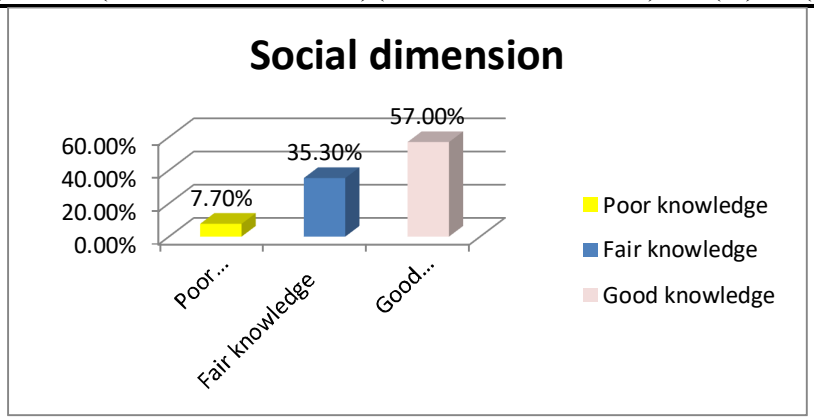


Figure (4): Total students' knowledge for social dimension of women empowerment as selected sustainable development goal (no.=955).

Figure (4) discovers that, (57%) of students have good level of total knowledge for social dimension of women empowerment as selected sustainable development goal, followed by (35.3%) of them have fair level and finally, (7.7%) have poor level of knowledge for social dimension of women empowerment as selected sustainable development goal.

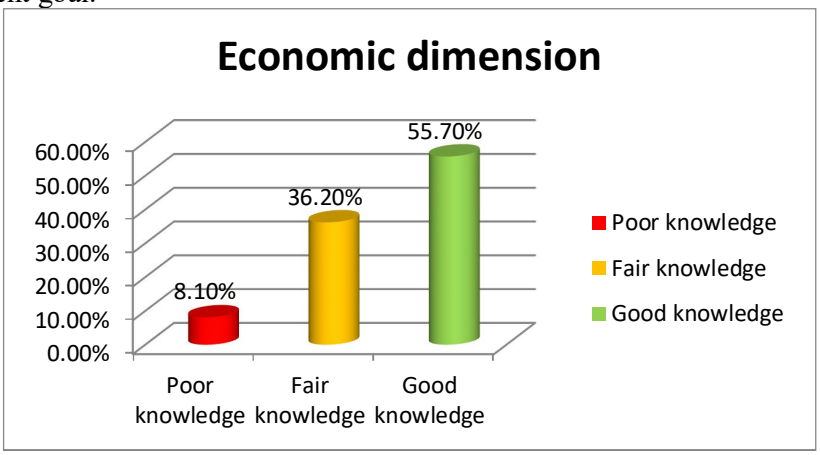


Figure (5): Total students' knowledge for economic dimension of women empowerment as selected sustainable development goal (no.=955).

Figure (5) clarifies that, (55.7%) of students have good level of total knowledge for economic dimension of women empowerment as selected sustainable development goal, followed by (36.2%) of them have fair level and finally, (8.1%) have poor level of knowledge for economic dimension of women empowerment as selected sustainable development goal.

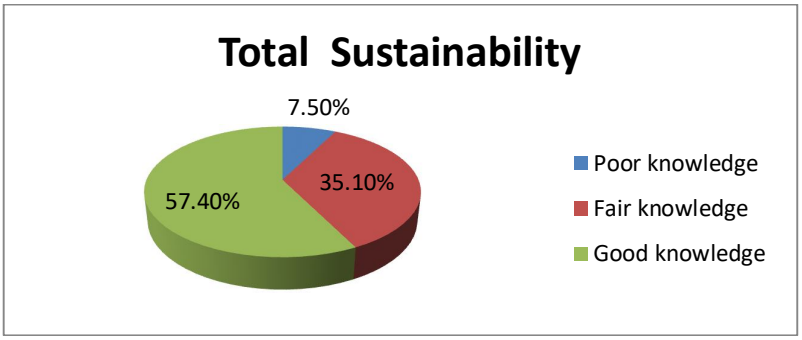


Figure (6): Total students' knowledge for women empowerment as selected sustainable development goal (no.=955).

Figure (6) displays that, (57.4%) of students have good level of total knowledge for women empowerment as selected sustainable development goal, followed by (35.1%) of them have fair level and finally, (7.5%) have poor level of knowledge for women empowerment as selected sustainable development goal.

Table (2): Relation between students socio-demographic data and knowledge for women empowerment as selected sustainable development goal (no.=955).

Students socio-demographic data	Mean ± SD
Age	
● 15- <20	192.1600±39.4403
● 20- <25	184.2883±38.7075
● 25- 30	151.0000±31.8355
● >30	191.0000±0.00000
Anova (p-value)	**2.230 (.083NS)**
Gender	
● Male	179.3786±39.2759
● Female	189.4960±37.8051
T-test (p-value)	**4.053(0.001**)**
Area of residence	
● Rural	177.9814±39.19430
● Urban	188.1769±38.19284
T-test (p-value)	**3.866(0.001**)**
Marital status	
● Married	173.1250±41.5967
● Single	185.4627±38.5426
T-test (p-value)	**2.313(0.021*)**
● Yes	194.6565±33.4329
● No	176.7868±40.97006
T-test (p-value)	**7.260(0.001**)**

Table (2) reveals that there are statistically significant relations between students' students socio-demographic data and knowledge for women empowerment as selected sustainable development goal except age (p-value= 0.083).

Table (3): Correlation between students' total knowledge for women empowerment as selected sustainable development goal and their dimensions (no.=955).

Variables	Environmental dimension		Social dimension		Economic dimension		Total students' knowledge about Sustainability development goal	
	r	p	r	P	r	p	r	p
Environmental dimension			.750**	.001	.689**	.001	.829**	.001
Social dimension	.750**	.001			.841**	.001	.973**	
Economic dimension	.689**	.001	.841**	.001			.924**	.001
Total students' knowledge about Sustainability development goal	.829**	.001	.973**	.001	.924**	.001		

Table (3) shows that there are positive correlations with highly statistical significance between students' total knowledge for women empowerment as selected sustainable development goal and their dimensions(p-value= 0.001).

Discussion

Gender equality as well as women's empowerment are central pillars of global development and are formally recognized as SDG 5 by the UN. Achieving gender equality is not only a fundamental human right but also a necessary foundation for a peaceful, prosperous, and sustainable world. In a context of healthcare, promoting gender equality contributes to more inclusive, effective, and equitable care delivery **(Muñoz-Mazón et al., 2024).**

Nursing students, as future healthcare professionals and advocates for social justice, play a vital role in addressing gender-based disparities and promoting empowerment for women in both clinical and community settings. Their knowledge,

attitudes, and awareness toward gender equality significantly influence their ability to support female patients, advocate for women's health rights, and contribute to broader societal change **(Ahmed et al., 2023).**

However, in many educational settings, gender issues remain underexplored in nursing curricula, leading to gaps in understanding and application. Evaluating nursing students' knowledge about gender equality and its link to women's empowerment is therefore critical. Such insight can inform educational interventions that align with global development goals and prepare students to actively support and advance SDG 5 **(Abd El-Hamid et al., 2024).**

So, this study focused on assess knowledge of nursing students toward gender equality for women empowerment as selected sustainable development goal.

Concerning students' personal data, the present study revealed that the greatest number of the students' age was between 20- <25. Regarding their gender, a study results noted that more than half of them were female. Also, more than two-thirds of them lived in Rural areas. Finally, for their marital status, the majority of them were singles.

The finding that the majority of the participants were aged between 20 and less than 25 years aligned with the typical age range of undergraduate nursing students, suggesting that the sample represents a relatively young population likely in the early stages of their professional training and development. This age group is generally characterized by growing independence and increased awareness of professional and social responsibilities. With more than fifty percent of the participants were female, the gender distribution reflected the traditionally female-dominated nature of the nursing profession. However, this also emphasized the importance of ensuring that nursing education and practice remain inclusive and sensitive to both genders to foster a diverse workforce.

The fact that above two-thirds of the students resided in rural areas may highlighted disparities in access to resources, healthcare services, and educational support compared to urban counterparts. This rural predominance can also influence students' exposure to healthcare challenges, infrastructure limitations, and sociocultural attitudes—especially regarding topics like gender equality or access to care. Finally, the result that the majority of the students were single was consistent with the age distribution of the group and may influence their level of personal responsibility, freedom to pursue career opportunities, and their current life priorities, including education and career development.

This study on the line with **Mohamed et al. (2024)** performed a cross-sectional study among Egyptian nursing students and found that the majority of participants were aged 20–22 years, reflecting the typical age for students in their academic and clinical training years. Also, **Ahmed et al. (2023)** reported similar findings in their study on knowledge and attitudes toward patient care among nursing students, where most respondents were between 20–24 years of age, aligning with undergraduate education demographics. **While Aldosari (2022)** studied nursing students in the United States and found a significant proportion were aged 26 and above, especially in accelerated or second-degree nursing programs, which attract career changers and mature students.

Furthermore these findings agree with **Smith & Sinkford, (2022)** stated that approximately *90% of the global nursing workforce is female*, reinforcing the likelihood of higher female participation in nursing education. **Also, Soliman Abd El Aliem et al. (2024)** found that *around 70% of nursing students in their study sample were female*, consistent with your finding that over half the participants were women. While **Zamanzadeh et al. (2023)** conducted a study in Iran and found *a rising number of male students in nursing programs*, with nearly equal gender representation.

Also this finding parallel with **Al Sayed et al.,(2021)** observed that *more than 60% of their nursing student participants were from rural areas* in a study conducted in Upper Egypt. This was attributed to wider access to public universities and limited urban student representation. While **Sokro et al., (2024)** found that *most nursing students in their study resided in urban locations*, suggesting that urban residents may have greater access and motivation to pursue nursing education.

Moreover, this study agreed with Mohamed et al., (2024) reported that *over 85% of the nursing students in their study were single*, which is common in university-level health programs.

Regarding students hearing about sustainable development, the present study results reported that more than fifty percent of the students hadn't heard about sustainable development, but nearly forty-five percent of them had heard about sustainable development. From the researchers'

perception, it highlighted a significant gap in education and awareness about critical global issues. This lack of exposure may be due to limited integration of sustainability topics in school curricula, especially in non-environmental subjects. It also reflects a broader challenge in promoting the United Nations' Sustainable Development Goals (SDGs) among youth. Without foundational knowledge, students are less likely to engage in sustainable practices or share to solving pressing environmental, social, as well as economic issues.

This finding was parallel with **Bespalyy et al. (2024),** who revealed that students often have limited knowledge about global SDGs, with information received through media and university studies being insufficient

However, the finding was not congruent with the study performed by **Alsaati et al. (2020),** who conducted in Saudi Arabia and found that a significant percentage of students had heard the term "sustainability" through learning sources.

Regarding students' source of information about SD, the current study revealed that the highest percentage of the students' information about SD came from the internet. This is because it was easily accessible, constantly updated, and widely used by young people for learning and social interaction. Online platforms offer quick access to videos, articles, and campaigns that raise awareness in engaging and relatable ways.

This finding was aligned with **Roblek et al. (2020),** who indicated that the highest number of students rely on the internet as their primary source of data about sustainable development.

Conversely, **Ghisetti and Michoud, (2023)** research highlighted that less than two-thirds of students Participate actively in social media posts about sustainability.

Regarding the total students' knowledge for the environmental dimension of women empowerment as selected sustainable development goal, the actual study revealed that nearly sixty-six percent of the students had a good level of total knowledge for the environmental dimension of women empowerment as selected sustainable development goal. This could be because environmental issues were widely discussed in the media, social platforms, and academic settings. These topics often highlighted the direct impact of environmental challenges on women, making students more aware of their importance in applying gender equality as well as SD.

This was aligned with **Zvavahera et al. (2023)**, who reported that more than sixty-six percent of the university students in Zimbabwe had moderate to high understanding of the intersection between gender equality and environmental SDGs. Also, **Sacoto-Loor et al. (2023)** in Ecuador found that two-thirds of the students displayed good awareness of environmental sustainability and women's rights.

Conversely, the study findings are not congruent with **Gupta et al. (2024)**, who revealed that inconsistent awareness levels (range: 40%–65%) about the environmental dimensions of SDG 5 exist among students across Asia.

For the total students' knowledge of the social dimension of women empowerment as selected sustainable development goal, the present study reported that more than fifty percent of the students had a good level of total knowledge for the social dimension of women empowerment as selected sustainable development goal. This was because this topic is commonly emphasized in academic curricula, awareness campaigns, and global development discussions, making students more informed about issues like gender equality, education access, and women's rights.

This finding was aligned with **Alshraah & Alawawdeh (2024)**, who conducted a study in Jordan and revealed that more than sixty-six percent of the students showed a good level of knowledge and strong understanding of social empowerment themes in SDGs through digital education initiatives.

However, **Espino-Díaz & Luque-González (2024)** reported that less than half of Spanish university students recognized social justice or gender equity as SDG-related learning priorities.

Total students' knowledge for women's empowerment as selected sustainable development goal, the current study noted that more than half of the students had a good level of total knowledge for women's empowerment as selected sustainable development goal. This could be due to increased global focus on gender equality, inclusion of the topic in education, and widespread access to information through digital platforms. These factors help raise awareness and understanding among students.

This was supported by **Adeleye et al. (2024)** study decided that more than half of students demonstrate a good level of knowledge about women's empowerment, particularly in regions where sustainable development goals are integrated into educational curricula

However, these findings were not congruent with **Ghosh et al. (2024), who explained that** despite awareness, less than half of students struggle to connect women's empowerment with broader sustainable development dimensions, indicating gaps in comprehensive understanding.

Relation between students' socio-demographic data and knowledge for women's empowerment as selected sustainable development goals. The present study revealed that there were statistically significant relations between students' socio-demographic data and knowledge for women empowerment as selected sustainable development goals, except age (p-value 0.083). This was likely because factors like education level, field of study, and exposure to information have a more direct influence on students' awareness than age alone. They often received similar educational content and have comparable access to information sources like the internet or media. In contrast, other socio-demographic factor such as academic major, year of study, or exposure to related topics can more directly influence their knowledge of women's empowerment, leading to stronger associations.

This finding was parallel with **Gopalakrishnan et al. (2024),** Studies that indicated a high percentage of female students demonstrate higher awareness of women's empowerment compared to their male counterparts, showing a statistically significant relationship between gender and knowledge. Also, **Zahl-Thanem and Rye, (2024)** study highlighted that students from urban areas or with higher educational attainment exhibit significantly better knowledge of women's empowerment and its dimensions. Moreover, **Goulart et al. (2021)** found no statistically significant relationship between age and knowledge, with percentages showing minimal variation across age groups.

Concerning the Correlation between students' total knowledge for women empowerment as selected sustainable development goal and their dimensions, the current study displayed that there was a positive correlation with highly statistical significance between students' total knowledge for women empowerment as selected sustainable development goal and their dimensions (Environmental, social, and economic dimensions) (p value= 0.001). This was because these aspects are interconnected. A better understanding of one dimension often enhances comprehension of the others, reflecting a holistic grasp of how empowering women is linked to sustainable development across multiple areas.

This finding was attributed to **Adeleye et al. (2024)** reported that a statistically significant positive correlation ($p < 0.05$) exists between students' knowledge of women empowerment and their understanding of environmental, social, and economic dimensions. Also, **Jahan's (2021)** study highlighted that student exposed to sustainability education programs show improved knowledge and attitudes towards women's empowerment.

Conversely, **Aslam et al. (2024)** research indicated that in institutions where sustainability education was not well-integrated, the correlation between knowledge of women empowerment and its dimensions were weak or statistically insignificant.

Conclusion

From the findings of this study, this study concluded that about two thirds of students had good level of total knowledge for environmental dimension of women empowerment, above fifty percent of students had good level of total knowledge for social as well as economic dimensions of women empowerment.

Moreover this result displayed that, above half of students had good level of total knowledge for women empowerment as selected sustainable development goal, followed by above one third of them had fair level and finally, under tenth of them had poor level of knowledge for women empowerment as selected sustainable development goal.

Finally this study revealed that there were statistically significant relations between students' students socio-demographic data and knowledge for women empowerment as selected sustainable development goal except age (p-value= 0.083).

Recommendations

- Should embed comprehensive modules on gender equality, women's rights, and empowerment into undergraduate and postgraduate courses. These modules should align with SDG 5 objectives and highlight the nurse's role in promoting equity in healthcare.
- Organize continuous education workshops, seminars, and discussions focused on gender-related issues in healthcare to reinforce awareness and critical thinking among students on nursing faculties
- Incorporate real-world case studies, role-playing scenarios, and simulations that focus

on gender-based disparities and empowerment strategies. This assist bridge the gap between theoretical knowledge as well as skills application in clinical settings.

- Promote student involvement in community-based initiatives or research projects that address gender equality and women's health. This fosters leadership, accountability, and a deeper understanding of social determinants of health.

References

1. Abd El-Hamid, S. M., Abdelrahman, W. M., & Mohamed, M. G. (2024). Effect of Educational Program on Maternity Nursing Students' Perception toward Sustainability Development: Challenges for Women Empowerment and Reducing Maternal Mortality. International Egyptian Journal of Nursing Sciences and Research, 5(2), 135-163.
2. Adeleye, O. R., Olivo, M. L. O., & Farkas, T. (2024). A Bibliometric Analysis of Women's Empowerment Studies Post Sustainable Development Goal Adoption Periods (2015–2022). Sustainability, 16(4), 1499.
3. Ahmed, M. N. Q., Lalin, S. A. A., & Ahmad, S. (2023). Factors affecting knowledge, attitude, and practice of COVID-19: A study among undergraduate university students in Bangladesh. Human Vaccines & Immunotherapeutics, 19(1), 2172923.
4. Al Sayed, O., Samir, A., & Anwar, H. H. (2021). Assessing fiscal sustainability in Egypt: a comparative study. Review of Economics and Political science, 6(4), 292-310.
5. Aldosari, N. (2022). Forward Escaping: a grounded theory study of becoming a nurse in Saudi (Doctoral dissertation, The University of Manchester (United Kingdom)).
6. Alsaati, T., El-Nakla, S., & El-Nakla, D. (2020). Level of sustainability awareness among university students in the eastern province of Saudi Arabia. Sustainability, 12(8), 3159.
7. Alshraah, S. M., & Alawawdeh, N. (2024). Digital initiative, literacy and gender equality: Empowering education and language for sustainable development. Journal of Advanced Humanities, 6(1), 122–136. Retrieved from https://www.royallitegioba-advanced humanities.com/code/uploads/20032025233647.pdf
8. Aslam, A., Abidi, S. N. M., & Rizvi, S. S. A. (2024). Digital Literacy and Women's Empowerment: Bridging the Gender Gap in Technology for Achieving Sustainable Development Goals (SDGs). Pakistan Journal of Gender Studies, 24(2), 93-106.
9. Barth, M., Godemann, J., Rieckmann, M., & Stoltenberg, U. (2020). Developing key competencies for sustainable development in higher education. International Journal of Sustainability in Higher Education, 8, 416n430.
10. Bespalyy, S., Alnazarova, G., Scalcione, V. N., Vitliemov, P., Sichinava, A., Petrenko, A., & Kaptsov, A. (2024). Sustainable development awareness and integration in higher education: a comparative analysis of universities in Central Asia, South Caucasus and the EU. Discover Sustainability, 5(1), 1-18.
11. Canadian Audit and Accountability Foundation, (2017). Practice Guide to Auditing the United Nations Sustainable Development Goals: Gender Equality. www.caaf-fcar.ca/en . Page43-58
12. Cummings, S.J.R., Regeer, B.J., de Haan, L.J.A., Zweekhorst, M.B.M. and Bunders, J.F.G. (2018) 'Critical discourse analysis of perspectives on knowledge and knowledge societies within the Sustainable Development Goals', Development Policy Review 36(3) unpaginated
13. Cutter, A., (2020). Map the interactions between Sustainable Development Goals. Environment, development and sustainability journal,Vol. 16, No.2, Pp. 334-340
14. Espino-Díaz, L., & Luque-González, R. (2024). Exploring the impact of project-based learning on Sustainable Development Goals awareness and university students' growth. European Journal of Educational Research, 13(2), Article 183534090. Retrieved from https://search.ebscohost.com/login.aspx
15. Ferguson, L., Anderson, M. E., Liang, M., & Filmer-Wilson, E. (2024). Why a good law is not always good enough: a global review of restrictions to supportive laws for sexual and reproductive health and rights. BMJ Global Health, 9(2), e014100.
16. Gericke, N., Boeve de-Pauw, J., Berglund, T., & Olsson, D. (2018). The sustainability consciousness questionnaire (SCQ): The theoretical development and empirical validation of an evaluation instrument for stakeholders working with sustainable development. Sustainable Development, 1-15. doi: 10.1002/sd.1859.
17. Ghisetti, C., & Michoud, K. (2023). Measuring the Impact of Digital Technologies on Sustainable Development from Scientific Literature: a Natural Language Processing analysis.
18. Ghosh, G., Roy, P., Das, R., & Hembrom, M. (2024). Women Empowerment as a Tool to Attain Sustainable Development Goals: A Study of a Remote Area of West Bengal, India. In Sustainable Partnership and Investment Strategies for Startups and SMEs (pp. 271-286). IGI Global.
19. Gopalakrishnan, L., El Ayadi, A., & Diamond-Smith, N. (2024). The role of community-level men's and women's inequitable gender norms on women's empowerment in India: A multilevel analysis using India's National Family Health Survey–5. PLOS ONE
20. Goulart, C. M., Purewal, A., Nakhuda, H., Ampadu, A., Giancola, A., Kortenaar, J. L., & Bassani, D. G. (2021). Tools for measuring gender equality and women's empowerment (GEWE) indicators in humanitarian settings. Conflict and health, 15(1), 39.
21. Gupta, S., Wei, M., & Tzempelikos, N. (2024). Women empowerment: Challenges and opportunities for sustainable development goals. Qualitative Market Research: An International Journal. https://doi.org/10.1108/QMR-11-2023-0160
22. Jahan, M. (2021). Assessment of knowledge, attitude and practices towards gender equality in achieving SDG5. The Journal of Indonesia Sustainable Development Planning, 2(3), 290-306.Mackey, A., & Petrucka, P. (2021). Technology as the key to women's empowerment: a scoping review. BMC women's Health, 21, 1-12.
23. Mohamed, M. A. E. S., Ghallab, E., Hassan, R. A. A., & Amin, S. M. (2024). Sustainability consciousness among nursing students in Egypt: a cross-sectional study. BMC nursing, 23(1), 343.
24. Monaco, S. (2024). SDG 5. Achieve Gender Equality and Empower All Women and Girls. In Identity, Territories, and Sustainability: Challenges and

Opportunities for Achieving the UN Sustainable Development Goals (pp. 51-62). Emerald Publishing
25. Muñoz-Mazón, A. I., Villacé-Molinero, T., Fuentes-Moraleda, L., & Moncada Jiménez, P. (2024). The influence of a gender equality course in tourism on university students' SDG knowledge, attitude and practice (KAP). International Journal of Sustainability in Higher Education.
26. Pakkan, Sh., (2022). A correlation study of sustainable development goal (SDG) interactions. Qual Quant. https://doi.org/10.1007/s11135-
27. Petersen, C. J. (2024). The impact of the pandemic on reproductive autonomy and gender equality: Perspectives from the sustainable development agenda. Law and Development Review, (0).
28. Roblek, V., Meško, M., Bach, M. P., Thorpe, O., & Šprajc, P. (2020). The interaction between internet, sustainable development, and emergence of society 5.0. Data, 5(3), 80.
29. Sacoto-Loor, J., Amor, M. I., & Osuna, M. (2023). Psychometric analysis of the WOEM-M scale to evaluate women empowerment in the Ecuadorian university environment. Sustainability, 15(23), Article 16484. https://doi.org/10.3390/su152316484
30. Samosir, O. B., Kiting, A. S., & Aninditya, F. (2020). Role of information and communication technology and women's empowerment in contraceptive discontinuation in Indonesia. Journal of Preventive Medicine and Public Health, 53(2), 117
31. Sharma, B. (2015). Level of women empowerment and it's determinates in selected South Asian countries. IOSR Journal Of Humanities And Social Science, 20(4), 94–105
32. Smith, S. G., & Sinkford, J. C. (2022). Gender equality in the 21st century: Overcoming barriers to women's leadership in global health. Journal of Dental Education, 86(9), 1144-1173.
33. Sokro, E., Obuobisa-Darko, T., & Okpattah, B. (2024). Learner attitudes, satisfaction and success in online learning environments: a mediation-moderation model for higher educational institutions. International Journal of Educational Management.
34. Soliman Abd El Aliem, R., Mohammad Emam, A., Ezzat Said, N., & Kamal Ali, F. (2024). Implementing Competency Outcomes and Performance Assessment Model on Maternity Nurses' Performance regarding Infection Control Measures at Delivery Room. Journal of Nursing Science Benha University, 5(2), 145-167.
35. Talukder, M. B., Kabir, F., Hasan, M. M., & Dhiraj, A. (2024). Effective Technology for Gender Equity in the Hospitality Business: Global Perspectives. In Effective Technology for Gender Equity in Business and Organizations (pp. 227-260). IGI Global.
36. Tekbiyik, A., & Celik, M. (2019). Education for sustainable development in primary school: Improvement of students' ecocriticism skills. Journal of Education in Science Environment and Health, 5(2), 178-191.https://doi.org/10.21891/jeseh.568716
37. Thomas, T., (2020). Are business students buying it? A theoretical framework for measuring attitudes toward the legitimacy of environmental sustainability. Business Strategy and the Environment, 14(3), 186-197.
38. Valduga, I. B., Lima, M. A. D., Castro, B. C. G., Fuchs, P. G., Amorim, W. S. D., & Guerra, J. B. S. O. D. A. (2023). A balanced scorecard proposal for gender equality and sustainable development. Sustainability, 15(19), 14384.
39. Zahl-Thanem, A., & Rye, J. F. (2024). Spatial inequality in higher education: A growing urban–rural educational gap? European Sociological Review, 40(6), 1067–1081.
40. Zamanzadeh, V., Ghahramanian, A., Valizadeh, L., & Bagheriyeh, F. (2023). Iranian nursing applicants' perception of the nursing profession: A qualitative study. Nursing open, 10(6), 3728-3736.
41. Zvavahera, P., Pasipanodya, S., Bogalin, V., & Aquino, E. (2023). Exploring the relationship between gender and sustainable development competencies in higher education institutions: Insights from a Zimbabwean university. Qeios.