

Original Scientific Paper



DETERMINATION OF THE AWARENESS LEVELS OF MIDWIFERY STUDENTS STUDYING IN DIFFERENT REGIONS OF TURKEY ON SUSTAINABLE DEVELOPMENT: A CROSS-SECTIONAL ANALYTICAL STUDY

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DOI: <https://doi.org/10.65241/wh.8.1.6>

For citation: Dirgar E, Yaman T, Unal Nursemin, Tosun Betul. Determination of the awareness levels of midwifery students studying in different regions of Turkey on sustainable development: A cross-sectional analytical study. *World of Health*. 2025;1(8):45-52. <https://doi.org/10.65241/wh.8.1.6>

Received: 27 August 2025 | Revised: 22 September 2025 | Accepted: 26 September 2025

ABSTRACT

Background: Sustainable development is a key concept shaping the future in economic, environmental, and social dimensions. It is essential for healthcare professionals to be aware of this issue. Midwifery, directly impacting individual and public health, plays a role in achieving sustainable development goals. This study aims to assess the awareness levels of midwifery students in different regions of Turkey regarding sustainable development, identify educational gaps, and propose improvements.

Methods: This cross-sectional analytical study was conducted with 404 midwifery students from two universities in Turkey during the 2024-2025 academic year. Data were collected using a Descriptive Information Form and the Sustainable Development Awareness Scale. Statistical analyses were performed using SPSS 25.0, and normality was tested with the Shapiro-Wilk test. Descriptive statistics included frequency, percentage, mean, and standard deviation. A p-value of <0.05 was considered statistically significant.

Results: The mean average age of participants was 21.24±2.85 years. While 84.4% had heard of sustainability, 92.1% had not received formal education on the topic. Additionally, 66.1% were unaware of the sustainable development goals, yet 81.2% believed midwifery contributes to achieving them. The total scale

score average was 152.14±20.54. Higher awareness was observed among first-year students, those familiar with sustainability, and those whose families worked in the service sector ($p<0.05$).

Conclusions: Midwifery students demonstrated above-average awareness of sustainable development. However, those exposed to sustainability education or familiar with the concept had significantly higher awareness. These findings emphasize the need to integrate sustainable development topics into midwifery curricula and develop educational programs to enhance awareness.

Keywords: Midwifery, Midwifery students, Sustainability, Sustainable development, Sustainable Development Goals.

INTRODUCTION

The Sustainable Development Goals (SDGs), which define the global development agenda for the 2015–2030 period, are grounded in principles such as eradicating poverty and hunger, ensuring the sustainable use of natural resources, promoting human rights and social justice, fostering global peace through security and equity, and establishing a shared responsibility among nations through multi-stakeholder cooperation (1,2). The SDGs consist of 17

overarching goals and 169 specific targets designed to create an inclusive, resilient, and sustainable future. Many of these goals, such as Goal 3 (Good Health and Well-Being), Goal 5 (Gender Equality), and Goal 10 (Reduced Inequalities) are directly aligned with improving women's empowerment, access to healthcare, and their active participation in social and economic life (3).

A country's success in achieving the SDGs is closely tied to the social and economic empowerment of women, who often face structural disadvantages in access to education, healthcare, and employment (4). Indeed, the very first SDG—"to end poverty in all its forms everywhere"—disproportionately impacts women, particularly in low- and middle-income countries. Poverty, in many global contexts, has become feminized. Gender norms continue to place women in subordinate social roles, often restricting them to unpaid caregiving and household labor, thereby limiting their agency, and reinforcing cycles of poverty and dependency (5,6). Recent global monitoring reports emphasize that the COVID-19 pandemic and climate-related crises have further deepened gender-based inequalities, underscoring the need for health professionals to engage actively with the SDG agenda (7). Given that midwifery is a female-dominated profession inherently concerned with women's health, midwives are uniquely positioned to act not only as healthcare providers but also as advocates for social transformation. Midwives need to develop a critical understanding of how poverty, gender inequality, and systemic exclusion intersect to affect women's health outcomes across the life course. Their role must extend beyond clinical practice to include advocacy, community mobilization, and collaboration with social services and policy-makers to promote structural changes aligned with SDG priorities (8,9). Emerging scholarship highlights that midwives, when equipped with sustainability and leadership competencies, can serve as key actors in promoting reproductive justice and climate-resilient health systems (10). Furthermore, the concept of "planetary health" has gained prominence as a framework that links human health to ecological stability and social equity. This perspective calls for integrating environmental sustainability into health professions' curricula, ensuring that future practitioners understand the interconnectedness between ecological change, social justice, and health outcomes (11,12). Integrating sustainability principles into midwifery education is therefore essential not only for equipping students with ecological and social awareness but also for preparing them as leaders who can contribute to planetary health and global equity (12). Evidence from recent European and North American studies suggests that embedding SDGs into professional training enhances students' advocacy

skills and strengthens their ability to address health inequities in diverse contexts (13,14).

In this context, the present study aims to explore the perceptions of midwifery students regarding the role of the 2030 SDGs in promoting health and equity. Understanding how future midwives conceptualize sustainable development is essential for aligning educational content with global health priorities. The findings are expected to inform curriculum development by highlighting the need for holistic and interdisciplinary approaches within midwifery education. Furthermore, fostering awareness of sustainability within midwifery is crucial for reframing health not merely as a biomedical issue but as an ecological and social construct shaped by the interconnectedness of all living systems. Moreover, integrating sustainability principles into midwifery education is essential not only for equipping students with ecological and social awareness, but also for preparing them as leaders who can contribute to planetary health and global equity (15,16).

METHODS

DESIGN

A cross-sectional analytical study

SAMPLE

The population of the study consisted of midwifery students ($n = 695$) enrolled in the Midwifery Departments of two universities located in different regions of Turkey during the 2024–2025 academic year. The sample size was determined using the G*Power 3.1.4.2 program. Based on a similar study in the literature (4), with a significance level of $\alpha = 0.05$, statistical power ($1 - \beta$) of 0.95, and an effect size of $d_z = 0.25$, the minimum required sample size was calculated as 176 participants to achieve 80% power. The study was completed with the participation of 404 midwifery students.

DATA COLLECTION

The data of the study were collected through a structured Descriptive Information Form developed by the researchers and the Sustainable Development Awareness Scale. Data collection was conducted online using Google Forms, a secure and widely recognized digital platform that allows for efficient and confidential data gathering. The use of an online method facilitated access to participants from different geographical regions and ensured the standardization of questionnaire administration. To control the sample, the survey link was distributed

only to midwifery students through official university communication channels (student e-mails and class groups). At the beginning of the form, participants were asked to provide basic verification information (such as university and academic year), which was used solely for confirmation and anonymized before analysis. The Google Forms system restricted duplicate submissions from the same IP address, minimizing the risk of multiple entries by the same individual. Incomplete or inconsistent responses were excluded from the dataset. Participants were informed about the purpose of the study, and informed consent was obtained digitally prior to participation.

MEASUREMENT

Descriptive Information Form: The sociodemographic information form, consisting of 9 items, was developed by the researchers based on a comprehensive review of the relevant literature (6,8,9). This form was designed to collect data on students' personal and background characteristics, including variables such as age, academic year, university of enrolment, family's primary source of income, and type of residential area in which they were raised.

Sustainable Development Awareness Scale: The scale was developed by Atmaca et al. in 2019 (17). The validity and reliability studies of the scale were conducted with university students. The scale consists of a total of 37 items and includes three sub-dimensions: economic sustainability (items 1–13), social sustainability (items 14–22), and environmental sustainability (items 23–37). Among these, items 1, 8, 10, 24, 31, and 35 are negatively worded, and item 26 is a control item. The scale uses a 5-point Likert-type rating system. The minimum score obtainable from the scale is 36, and the maximum is 180. The Cronbach's alpha reliability coefficient of the original scale was found to be 0.910. In our study, the Cronbach's alpha value was calculated as 0.958.

DATA ANALYSIS

The statistical analysis of the study was conducted using the IBM SPSS Statistics version 25.0 software. Descriptive statistics were used to summarize the data: mean (M) and standard deviation (SD) were reported for continuous (quantitative) variables, while frequency (n) and percentage (%) were used for categorical variables. Since the data did not meet the assumptions of normal distribution, non-parametric tests were applied for comparative analyses. Specifically, the Mann-Whitney U test was used for two-group comparisons, while the Kruskal-Wallis H test was used for comparisons involving more than two independent groups. A significance level of $p < 0.05$ was considered statistically significant for all analyses. These statistical

methods were chosen to ensure the robustness and accuracy of the findings, considering the nature of the data distribution.

ETHICAL CONSIDERATIONS

Ethical approval for the study was obtained from the Ethics Committee (Date: 04.12.2024, Decision No: 2024/429). Before the data collection process commenced, all students who voluntarily agreed to participate in the study were informed in detail about the study's purpose, procedures, and their rights as participants. Written and verbal informed consent was obtained from each participant in accordance with ethical guidelines. Throughout all phases of the study, the principles of scientific research and publication ethics outlined in the Declaration of Helsinki were strictly adhered to. Confidentiality and anonymity of the participants were maintained, and the collected data were used solely for research purposes. Additionally, permission to use the Sustainable Development Awareness Scale in the study was formally obtained from the original author via email communication. The authors declare that they have no competing interests related to this research.

RESULTS

A total of 404 midwifery students participated in the study. The mean age of the participants was 21.24 ± 2.85 years. Of the participants, 59.7% were enrolled in a public university located in the Southeastern Anatolia Region, while 40.3% were studying in the Central Anatolia Region. Most students were in their first (38.4%) and second (35.6%) years of study. A substantial portion of the participants (58.9%) reported having grown up in a village, and 42.1% stated that their family's main source of income was the service sector (e.g., education, healthcare). While 83.4% of the students had previously heard of the concept of sustainability, only 7.9% reported having received formal education on the topic. Additionally, 33.9% were familiar with the SDGs, and 81.2% believed that the midwifery profession contributes to achieving these goals (Table 1).

Table 1. Sociodemographic characteristics of midwifery students (n:404)

	N	%
Age 21.24±2.85 (Min:18; Max:45)		
Region		
Central Anatolia Region	163	40.3
Southeastern Anatolia Region	241	59.7
Academic year		
1.	155	38.4
2.	144	35.6
3.	64	15.8
4.	41	10.2
Residential area		
City centre	37	9.2
District	129	31.9
Village	238	58.9
Main source of family income		
Agriculture and livestock	51	12.6
Industry	74	18.3
Trade	109	27.0
Service sector	170	42.1
Knowledge of the term 'sustainability'		
Yes	337	83.4
No	67	16.6
Received education on sustainability		
Yes	32	7.9
No	372	92.1
Awareness of the SDGs		
Yes	137	33.9
No	267	66.1
Belief that midwifery contributes to SDGs		
Yes	328	81.2
No	76	18.8

The mean total score on the Sustainable Development Awareness Scale was 152.14±20.54, indicating a high level of awareness among midwifery students. Among the sub-dimensions, the highest mean score was observed in environmental sustainability (60.62±8.63), followed by economic sustainability (52.75±7.13) and social sustainability (38.78±6.03). The internal consistency of the overall scale was excellent, with a Cronbach's alpha coefficient of .958, indicating high reliability (Table 2).

Table 2. Mean scores and reliability coefficients of the Sustainable Development Awareness Scale and its subdimensions

Scale	SD	Min-Max	Cronbach's alfa
Sustainable Development Awareness Scale			
	152.14±20.54	61-180	0.958
Economic Sustainability			
	52.75±7.13	26-65	0.867
Social Sustainability			
	38.78±6.03	9-45	0.948
Environmental Sustainability			
	60.62±8.63	27-73	0.888

When students' awareness levels were compared across various demographic and academic variables, several statistically significant differences were identified. Students studying in the Central Anatolia Region scored significantly higher across all sub-dimensions economic (55.23±5.27), social (40.43±4.60), and environmental sustainability (63.76±6.85) compared to those in the Southeastern Anatolia Region. Analysis of variance revealed a statistically significant difference in awareness levels across academic years ($p=0.000$). Post hoc analysis with Bonferroni correction showed that first-year students had significantly higher total awareness scores compared to second- and third-year students. Although the difference based on place of upbringing was not statistically significant, students who were raised in urban areas had relatively higher scores (153.43±21.97) than those raised in districts or villages. Additionally, students whose families were employed in the service sector demonstrated higher levels of environmental sustainability awareness compared to those whose families worked in industry or agriculture-livestock sectors. Moreover, participants who had previously heard of the concept of sustainability, as well as those who believed that midwifery contributes to the SDGs, exhibited significantly higher levels of awareness across all sub-dimensions and in the total scale score (Table 3).

Table 3. Comparison of Sustainable Development Awareness Scale scores by demographic and academic variables

Variable	Economic Sustainability	Social Sustainability	Environmental Sustainability	Total Score of the Sustainable Development Awareness Scale
Region				
Central Anatolia Region	55.23±5.27	40.43±4.60	63.76±6.85	159.43±15.00
Southeastern Anatolia Region	51.07±7.72	37.67±6.61	58.50±9.06	147.21 ±22.27
T, p	6.003; 0.000*	4.630; 0.000*	6.289;0.000*	6.124;0.000*
Academic year				
1.a	54.58±6.33	39.96±5.01	62.87±7.77	157.40±17.60
2.b	51.99±7.57	38.26±6.89	60.00±9.15	150.25±22.49
3.c	50.65±7.05	37.42±5.78	57.98±8.75	146.03±19.81
4.d	51.78±7.16	38.31±6.14	58.41±8.75	148.46±20.88
KW, p	6.299; 0.000*; a-b,c	3.560; 0.014*; b-c	6.659; 0.000*; a-b	6.730;0.000*; a-b,c
Residential area				
City centre	53.91±7.93	40.18±6.67	62.61±8.51	153.43±21.97
District	52.89±5.93	39.24±5.26	61.28±7.92	153.41±17.82
Village	52.50±7.58	38.32±6.28	60.00±8.98	150.79±21.60
KW, p	0.667;0.514	2.077;0.127	1.727;0.179	1.573;0.209
Main source of family income				
Agriculture and livestock ^a	52.82±8.33	39.15±7.20	61.15±9.04	153.11±23.58
Industry ^b	50.44±7.68	37.14±6.72	57.74±9.49	145.32±22.63
Trade ^c	52.49±7.15	38.18±5.57	59.51±8.70	150.19±20.23
Service sector ^d	53.90±6.23	39.77±5.44	62.42±7.63	156.08±17.88
KW,p	4.209; 0.006*; b-a	3.850;0.010; b-a	6.703;0.000*; d-a,b	5.335;0.001*; b-a
Knowledge of the term 'sustainability'				
Yes	53.93±6.34	39.57±5.37	61.92±7.85	155.41±18.25
No	46.83±7.91	34.83±7.50	54.07±9.41	135.71±23.46
T, p	7.998;0.000*	6.130;0.000*	7.719;0.000*	7.666; 0.000*
Belief that midwifery contributes to SDGs				
Yes	53.91±6.34	39.59±5.31	61.95±7.77	155.45±17.96
No	47.75±8.17	35.28±7.56	54.88±9.76	137.89±24.62
T, p	7.206;0.000*	5.834;0.000*	6.787;0.000*	7.116;0.000*

DISCUSSION

This study investigated the awareness levels of midwifery students from different regions of Turkey regarding sustainable development and the SDGs. Conducted with the participation of 404 students, the findings underscore several critical points for both midwifery education and national strategies aligned with the 2030 Agenda.

The high average scores observed in the environmental sustainability subdimension align with global trends emphasizing the health sector's role in mitigating environmental degradation (5). As primary healthcare providers for women and infants, midwives play a crucial role in promoting environmentally sustainable practices such as waste reduction, advocacy for clean water, and eco-friendly maternal care (18). However, the relatively lower scores in the social sustainability subdimension point to a potential gap in understanding broader determinants of health such as equity, social justice, and cultural competence which are core pillars of the SDGs (3). This suggests that midwifery students must enhance their awareness not only of environmental and economic dimensions but also of social factors that influence quality of life and community well-being. Since social sustainability encompasses key themes like gender equality, support for disadvantaged groups, cultural sensitivity, and equitable access to healthcare, this deficiency may negatively impact the holistic and inclusive nature of care provided in the future. Therefore, integrating more content on social sustainability into professional education programs is crucial to equipping students with a multidimensional perspective.

The study also found that first-year students exhibited significantly higher levels of sustainability awareness compared to their final-year peers. This finding indicates that without systematic integration throughout the curriculum, students' initial awareness may decline over time. The lack of sustained reinforcement in later academic years may reflect curricular gaps in embedding sustainability content. As McKimm et al. (2020) also noted, effective sustainable healthcare education requires integration across all levels of training and continuous reinforcement through faculty leadership (19). In this context, vertical integration of sustainability is essential not only to improve knowledge but also to enable students to link their professional responsibilities with global health goals.

Another noteworthy result of this study is the significant regional variation observed between two areas of Turkey. Students from the Central Anatolia region demonstrated higher awareness across all dimensions of sustainability. These differences may reflect variation in institutional curricula, access to extracurricular opportunities related to sustainability, or differences in faculty engagement (20). However, structural, and

socio-cultural factors may also play a role. The region's stronger academic infrastructure and broader exposure to national sustainability initiatives may enable students to issues like poverty, inequality, women's health challenges, and environmental concerns—core topics of the SDGs—leading to a stronger sense of professional responsibility. This might help students personalize and internalize sustainability concepts. Previous studies in Turkey and elsewhere have emphasized the importance of institutional leadership and regional policy priorities in shaping students' engagement with global health competencies (21).

Another important finding is that students whose families work in the service sector had higher levels of awareness, particularly in the environmental sustainability dimension. This may be due to greater exposure to education, media, or health-related professions in service-based households. It is consistent with international studies showing that students with urban and service-oriented backgrounds are more attuned to global sustainability discourses (17,22).

A particularly striking result is that although students demonstrated strong belief in the midwifery profession's contribution to achieving the SDGs, only a small proportion had received formal education on the subject. This gap is concerning given the growing global emphasis on sustainability competencies among health professionals. The International Confederation of Midwives (8) explicitly recommends that midwifery education programs integrate the principles of sustainable development into their core curricula. However, a review of the literature reveals similar findings to our study: while students express strong interest in sustainability, formal training on the topic remains limited (6,23,24). Integrating these principles through both theoretical instruction and community-based learning can enhance not only awareness but also students' ability to act as change agents in their future practice (9).

PRACTICAL IMPLICATIONS

The findings of this study have several practical implications for midwifery education and practice. First, the results highlight the urgent need to systematically integrate sustainability concepts into midwifery curricula. By embedding sustainability-related content across all academic years, educational programs can prevent the decline in awareness observed among senior students and ensure continuity of knowledge. Second, educators should prioritize experiential and community-based learning strategies, enabling students to apply sustainability principles in real-world contexts and to develop the competencies required to act as change agents in their professional practice.

Moreover, the study demonstrates that midwives'

awareness of sustainability is closely linked to broader issues of social justice, gender equality, and ecological responsibility. Therefore, midwifery education programs should not only provide theoretical knowledge but also foster advocacy, leadership, and interprofessional collaboration skills. Such competencies are essential for addressing health inequities and contributing to the SDGs at local, national, and global levels. Finally, policymakers and curriculum developers may use these findings to design targeted training modules and institutional strategies, ensuring that future midwives are equipped with the necessary tools to promote both health and sustainability.

LIMITATION

This study has several limitations. First, the sample was limited to students from only two universities located in different regions of Turkey, which may affect the generalizability of the findings to all midwifery students nationwide. Second, data were collected through self-reported online forms, which may be subject to response bias or social desirability effects. Additionally, the cross-sectional design of the study restricts the ability to draw causal inferences. Future research should include more diverse institutions, utilize longitudinal designs, and explore the impact of targeted educational interventions on sustainability awareness in midwifery education.

CONCLUSION

This study revealed that midwifery students have a generally high level of awareness regarding sustainable development. However, awareness levels were significantly higher among students who had prior knowledge of sustainability, those who believed in the profession's contribution to the Sustainable Development Goals (SDGs), and first-year students. The findings emphasize the critical need to integrate sustainability concepts systematically into midwifery curricula, especially in the early stages of education. Furthermore, regional, and socioeconomic differences observed in awareness scores suggest that tailored educational strategies may be required to ensure equitable understanding of sustainability across diverse student populations. Promoting sustainability awareness in midwifery education is vital for preparing future professionals to contribute to global health and equity goals through informed and responsible practice.

ACKNOWLEDGMENT

We are grateful to the participants in this study.

AUTHORS' CONTRIBUTION

Conceptualization and study design were done by ED, TY, NU, BT. Data collection was carried out by ED, TY, NU and ED, NU, BT performed data management, analysis, and interpretation. ED, NU, BT prepared the initial manuscript draft, and critical revisions for important intellectual content were conducted by ED, TY, NU, BT. All authors read and approved the final version of the manuscript and take responsibility for the integrity and accuracy of the data analysis. The corresponding author attests that all listed authors meet the authorship criteria.

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