Alq J Sci. 2026;2(11):1055-1059
https://doi.org/10.69667/ajs.261106
Alqalam Journal of Science
مجلـــة القلم للعلـوم
https://alqalam.utripoli.edu.ly/index.php/AR

Original article

Knowledge and Awareness of Gynaecological Cancer Symptoms and Risk Factors Among Libyan Female Teachers in Tripoli: A Cross-Sectional Study

Najwa Eljabu[1], Rania Gammo[2]*, Asma ALwahedi[3]

[1]*Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Tripoli, Tripoli, Libya*
[2] *Department of Gynaecology and Obstetrics, University of Zawiya, Libya*
[3]*Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Tripoli, Tripoli, Libya*
Email. *r.qamu@zu.edu.ly*

Abstract
Recognition of gynaecological cancer warning symptoms, preventive measures, and screening options is relevant to timely healthcare seeking. This study examined reported awareness and knowledge among female schoolteachers in Tripoli, Libya. A descriptive cross-sectional survey was conducted among 200 Libyan female teachers at seven schools in Tripoli in 2022. A self-administered, closed-ended questionnaire assessed knowledge of gynaecological cancers, warning symptoms, risk factors, and screening. Data were analysed descriptively using SPSS version 25. Eighty participants (40.0%) reported having information about gynaecological tumours; 75 (37.5%) reported knowledge of screening programs, and 58 (29.0%) reported a previous Papanicolaou test. Among listed indications for gynaecological consultation, intermenstrual bleeding (52/200; 26.0%) and postmenopausal bleeding (48/200; 24.0%) were most frequently selected. HPV sexual transmission was acknowledged by 96 (48.0%), while 103 (51.5%) answered affirmatively to a question about HPV vaccination preventing cervical cancer. The most frequently selected symptom for cervical cancer was postmenopausal bleeding (59/200; 29.5%). In this schoolteacher sample, reported awareness of gynaecological cancer screening and selected preventive concepts was limited. The findings identify topics for targeted health education, but do not establish overall knowledge accuracy or predict screening behaviour.
Keywords. Gynecologic Neoplasms; Cancer Awareness; Cervical Cancer; Human Papillomavirus.

Introduction

Gynaecological malignancies encompass cancers of the cervix, endometrium, ovaries, fallopian tubes, vagina and vulva. Their epidemiology, prevention opportunities and presentation vary substantially across tumour sites. Global cancer estimates demonstrate major geographical inequalities in incidence and mortality, especially for cervical cancer, for which effective primary and secondary prevention are available [1]. Population-level prevention depends on sustained delivery of human papillomavirus (HPV) vaccination and accessible cervical screening rather than on symptom recognition alone. Modelling studies have shown that combining vaccination with screening could substantially reduce future cervical cancer incidence in lower-resource settings [2,3].

Women's understanding of warning symptoms may influence whether they seek clinical evaluation, while knowledge of screening and vaccination may shape interest in preventive services. Yet knowledge is not synonymous with uptake: costs, transport, embarrassment, service availability and cultural or social barriers can constrain screening even when women recognise its purpose [4,5]. Furthermore, symptoms are often nonspecific and differ by tumour type. Abnormal uterine bleeding warrants evaluation in relevant clinical contexts, whereas persistent abdominal or pelvic symptoms may be encountered in ovarian cancer. Survey answers should therefore be interpreted as recognition of particular prompted options, not as proof of clinical diagnostic ability [6]. Surveys conducted in other settings have documented substantial variation in gynaecological cancer knowledge.

Research among healthy women in Turkey described differences in awareness across participant characteristics [7], while a Palestinian survey found gaps in knowledge of ovarian cancer risk and protective factors [8]. However, prevalence estimates from different questionnaires cannot be directly compared because response options, target populations and definitions of adequate knowledge differ. Female teachers are a relevant occupational group in which to describe awareness and identify educational topics, although their responses cannot be generalised to the broader population. The present study aimed to describe knowledge and beliefs concerning gynaecological cancer symptoms, risk factors, prevention and screening among female teachers in Tripoli, Libya, using data collected in 2022.

Methods

Study Design, Setting, and Sample

A descriptive, school-based cross-sectional study was conducted in seven schools in Tripoli, Libya, during 2022. The schools were reported to have been randomly selected. The study population comprised Libyan female teachers working in the participating schools, of whom 200 were included in the analysis.

Copyright *Author (s) 2026. Distributed under Creative Commons CC BY 4.0*
Received*: 16-09-2026 -* ***Accepted****: 14-11-2026 -* ***Published****: 12-11-2026*

Alq J Sci. 2026;2(11):1055-1059
https://doi.org/10.69667/ajs.261106
Alqalam Journal of Science
مجلـــة القلم للعلـوم
https://alqalam.utripoli.edu.ly/index.php/AR

Sample Size
The sample size was calculated using Epi Info with a 95% confidence level and a 5% margin of error. The final study sample comprised 200 teachers.

Recruitment and Study Procedure
Data were collected at the participating schools using a self-administered, closed-ended questionnaire. Teachers meeting the eligibility criteria were invited to participate after verbal consent was sought. The questionnaire covered demographic and reproductive characteristics, previous gynaecological consultations and screening, and knowledge of gynaecological cancer symptoms, risk factors, prevention, and management. The number of teachers approached and the response rate were not recorded.

Eligibility Criteria
Libyan female teachers aged 20–60 years who worked in the selected schools and agreed to participate were eligible. Non-Libyan teachers and those who did not consent were excluded.

Study Measures
A self-administered questionnaire was used, with closed response options including “yes”, “no”, and “I do not know” where applicable. Items addressed age, education, marital status, area of residence, gynaecological and screening histories, and awareness of gynaecological cancer symptoms, risk factors, and prevention. Further items concerned human papillomavirus (HPV), Papanicolaou (Pap) testing, and selected cancer types. Results were reported at the item level rather than as a composite knowledge score.

Participant Characteristics and Prior Healthcare
Demographic variables included age category, educational attainment, educational speciality, marital status, residence and, where relevant, age at marriage and number of children. Other items addressed reasons for gynaecological consultation, previous Pap smears and reported family cancer history. Variables with a restricted denominator are presented with that denominator rather than being automatically attributed to all 200 participants.

Cancer Symptom and Risk-Factor Items
The questionnaire provided prompted symptom choices for cervical, ovarian, endometrial and genital cancers and a set of statements about potential risk factors. Item frequencies were treated as the proportion selecting or endorsing each option. Endorsement of a statement was not automatically interpreted as accurate medical knowledge; risk-factor associations depend on cancer type and the weight of the underlying evidence.

Outcomes
The main descriptive outcomes were item-level counts and percentages for reported awareness of gynaecological cancers, awareness of screening programs, previous Pap testing and selected symptom and risk-factor responses. The study was not designed to estimate incidence of cancer, determine clinical diagnoses, or establish the causal effect of a risk factor.

Statistical Analysis
Data were analysed using IBM SPSS Statistics version 25. Categorical variables were summarised as frequencies and percentages, and continuous variables as means and standard deviations where applicable. The chi-square test was specified for associations between categorical variables, with statistical significance set at $p < 0.05$. The results presented here are descriptive; no additional inferential estimates were calculated.

Missing Data and Denominators
Most items were analysed using a denominator of 200 participants. Age at marriage and number of children were reported for 167 participants; percentages for those variables use the corresponding denominator. Missing responses were not imputed.

Ethical Considerations
Approval was obtained from the Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Tripoli, Libya. Participation was voluntary, and verbal informed consent was obtained. Participants were free to withdraw. Electronic data were password-protected, and hard-copy questionnaires were stored securely.

Copyright *Author (s) 2026. Distributed under Creative Commons CC BY 4.0*
Received: *16-09-2026 -* ***Accepted:*** *14-11-2026 -* ***Published:*** *12-11-2026*

Alq J Sci. 2026;2(11):1055-1059
https://doi.org/10.69667/ajs.261106
Alqalam Journal of Science
مجلـــة القلم للعلـوم
https://alqalam.utripoli.edu.ly/index.php/AR

Results

Participant Characteristics

A total of 200 teachers participated. The most common age range was 30–44 years (96/200; 48.0%). A diploma-level education was reported by 104 (52.0%), and 130 (65.0%) were married. Further baseline information appears in Table 1. Marriage-age and parity variables were reported for a denominator of 167 rather than 200 in the study and are therefore not generalised to all respondents.

Table 1. Sociodemographic characteristics of participants.

Characteristic	n / denominator	%
Age 22–29 years	18/200	9.0
Age 30–44 years	96/200	48.0
Age 45–51 years	72/200	36.0
Age 52–60 years	14/200	7.0
Diploma education	104/200	52.0
University education	96/200	48.0
Literary specialization	115/200	57.5
Scientific specialization	85/200	42.5
Married	130/200	65.0
Residing in East Tripoli	86/200	43.0
Residing in Central Tripoli	42/200	21.0
Residing in West Tripoli	72/200	36.0

Knowledge and Screening Practices

Eighty teachers (40.0%) stated that they had information about gynaecological tumours, whereas 120 (60.0%) reported no such information. Knowledge of screening programs was reported by 75 (37.5%) and a prior Pap smear by 58 (29.0%). Almost half acknowledged sexual transmission of HPV (96/200; 48.0%), and 103 (51.5%) responded positively to the HPV vaccine prevention question (Table 2). These are responses to individual questions, not evidence of comprehensive factual knowledge.

Table 2. Awareness and reported prevention-related responses (n=200).

Question / reported response	n / 200	%
Reported information about gynaecological tumours: yes	80	40.0
Knowledge of screening programs: yes	75	37.5
Previously underwent Pap smear: yes	58	29.0
Identified HPV as sexually transmitted: yes	96	48.0
HPV vaccine prevents cervical cancer: yes	103	51.5
Believed tumours can be prevented: yes	87	43.5

Recognition of Symptoms

For symptoms prompting gynaecological consultation, the most selected item was intermenstrual bleeding (52/200; 26.0%), followed by postmenopausal bleeding (48/200; 24.0%). When specifically asked about cervical cancer symptoms, postmenopausal bleeding was selected by 59 (29.5%), and intermenstrual bleeding by 44 (22.0%). Among ovarian cancer symptom options, back pain was selected by 77 (38.5%), compared with pelvic pain by 59 (29.5%). For endometrial cancer, postmenopausal bleeding was the most frequently selected response (66/200; 33.0%) (Table 3).

Table 3. Most commonly selected symptoms of gynaecological cancers.

Question domain	Most frequently selected response	n / 200 (%)
Reason to seek gynaecological evaluation	Intermenstrual bleeding	52 (26.0)
Cervical cancer symptom	Postmenopausal bleeding	59 (29.5)
Ovarian cancer symptom	Back pain	77 (38.5)
Endometrial cancer symptom	Postmenopausal bleeding	66 (33.0)
External genital cancer symptom	Genital wart	54 (27.0)

Copyright *Author (s) 2026. Distributed under Creative Commons CC BY 4.0*
Received: *16-09-2026 -* ***Accepted:*** *14-11-2026 -* ***Published:*** *12-11-2026*

Alq J Sci. 2026;2(11):1055-1059
https://doi.org/10.69667/ajs.261106
Alqalam Journal of Science
مجلـــة القلم للعلـوم
https://alqalam.utripoli.edu.ly/index.php/AR

Selected Risk-Factor Beliefs

Responses to selected risk-factor questions varied considerably. For instance, 130 (65.0%) identified high body mass index as a risk factor for tumours, 47 (23.5%) answered affirmatively about nulliparity and ovarian cancer, and 141 (70.5%) endorsed an item linking polycystic ovary syndrome to cancer. The questionnaire combined established risks, broadly worded exposures, and items with ambiguous or disease-specific evidence; consequently, proportions are presented as endorsed beliefs rather than a score of correct answers.

Table 4. Responses to selected gynaecological cancer risk-factor statements.

Selected risk-factor belief (yes)	n / 200	%
High BMI as risk for tumour	130	65.0
Older age (>50 years) as risk for cancer	165	82.5
Nulliparity as risk for ovarian cancer	47	23.5
Polycystic ovary syndrome as risk for cancer	141	70.5
Endometriosis as risk for cancer	63	31.5
Contraceptive use as risk for tumour	116	58.0
IVF treatment as risk for tumours	136	68.0

Discussion

The present survey among 200 female teachers in Tripoli found uneven self-reported awareness of gynaecological cancers. Only 40.0% reported having information about gynaecological tumours, 37.5% reported knowledge of screening programs, and 29.0% had undergone a Pap smear. These findings support the relevance of targeted information on prevention and screening, while the absence of a validated total knowledge score prevents classification of participants as having adequate or inadequate overall knowledge. Knowledge gaps have been documented elsewhere, although differences in questionnaire design preclude direct numerical comparisons. Öztürk et al. assessed gynecologic cancer awareness among women in Turkey and reported relationships between awareness and health-related experience [7]. In Palestine, Elshami et al. found limited awareness of ovarian cancer risk and protective factors, supporting the need for context-specific educational interventions [8]. The present study adds schoolteacher-level data from Tripoli, but its results should not be generalised to all Libyan women. A systematic review of screening barriers in low- and middle-income countries similarly identified limited awareness alongside structural and service-level obstacles [4].

Awareness of cervical cancer prevention merits particular attention. Fewer than half of respondents identified HPV as sexually transmitted, and approximately half answered affirmatively to the vaccine prevention question. HPV vaccination and cervical screening are complementary interventions supported by international evidence [2,3]. Nevertheless, answers to a yes/no question do not establish whether respondents understand eligibility, recommended schedules or how the intervention works. Similarly, a reported Pap smear history does not determine adherence to locally applicable screening guidelines. Evidence from randomised trials indicates that practical interventions, including reminders, self-sampling and subsidised access, can improve participation in cervical screening; education alone should not be assumed to resolve service barriers [5].

The prominence of bleeding-related symptoms in responses is clinically relevant, but survey choices require careful interpretation. For ovarian cancer, back pain was more frequently selected than pelvic pain, while the source questionnaire also offered gastrointestinal symptoms, increased abdominal size and early satiety. Prior research on ovarian cancer symptom patterns highlights the importance of persistent abdominal and pelvic symptoms [6]. Because participants were presented with predefined choices, their selections cannot be interpreted as spontaneous recall or sensitivity to warning signs. Several risk-factor items require even greater caution. Endorsement of statements about contraception, IVF, polycystic ovary syndrome or talc powder cannot be used as evidence that these exposures cause gynaecological cancer. The effects of reproductive factors and hormonal exposures vary by cancer type, and survey items must distinguish evidence-based risks from uncertain beliefs. For example, a systematic review has assessed associations between polycystic ovary syndrome and selected cancers, but such evidence does not justify a general statement that PCOS causes all gynecologic tumours [9]. The study has strengths in its defined school setting, inclusion of 200 teachers, and coverage of multiple symptom and prevention domains.

Limitations are the geographic restriction to Tripoli, lack of documented participant-level random sampling, incomplete reporting of questionnaire validation and missing data handling, and reliance on closed-ended, self-reported answers. There was no prespecified scoring rubric to establish correct knowledge or a population benchmark. Certain source items are internally ambiguous, including the reported cancer diagnosis history; accordingly, this article avoids inferring cancer incidence from those responses. Reporting observational findings transparently is consistent with STROBE recommendations [10]. Future work should validate an Arabic-language gynaecological cancer awareness instrument, separate knowledge from attitudes and behaviour, and assess screening access alongside knowledge. Educational

Copyright *Author (s) 2026. Distributed under Creative Commons CC BY 4.0*
Received: *16-09-2026 -* ***Accepted:*** *14-11-2026 -* ***Published:*** *12-11-2026*

Alq J Sci. 2026;2(11):1055-1059
https://doi.org/10.69667/ajs.261106
Alqalam Journal of Science
مجلـــة القلم للعلـوم
https://alqalam.utripoli.edu.ly/index.php/AR

initiatives should address HPV vaccination, screening and symptom recognition using medically accurate information, followed by evaluation of their impact rather than assuming that awareness alone changes clinical outcomes. In particular, future school-based outreach could be evaluated using pre-specified knowledge items and documented follow-up, while distinguishing changes in awareness from actual screening attendance.

Conclusion

Among 200 female teachers surveyed in Tripoli, self-reported knowledge of gynaecological cancer screening and selected preventive measures was limited and uneven. Only 37.5% reported awareness of screening programs and 29.0% reported having undergone a Pap smear. These descriptive findings identify potential priorities for targeted health education but do not establish overall knowledge competence, cancer risk or causal effects.

Declarations

Ethics and Consent

Approval was obtained from the Educational Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Tripoli, Libya. Verbal informed consent was obtained from participants, and participation was voluntary.

Funding

The authors received no specific funding for this work.

Competing Interests

The authors declare that they have no competing interests.

Data Availability

The underlying study data are available from the corresponding author upon reasonable request, subject to applicable confidentiality and ethical restrictions.

References

1. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2024;74(3):229–63. doi:10.3322/caac.21834. PMID:38572751.
2. Canfell K. Towards the global elimination of cervical cancer. Papillomavirus Res. 2019;8:100170. doi:10.1016/j.pvr.2019.100170. PMID:31176807.
3. Brisson M, Kim JJ, Canfell K, et al. Impact of HPV vaccination and cervical screening on cervical cancer elimination: a comparative modelling analysis in 78 low-income and lower-middle-income countries. Lancet. 2020;395(10224):575–90. doi:10.1016/S0140-6736(20)30068-4. PMID:32007141.
4. Petersen Z, Jaca A, Ginindza TG, Maseko G, Takatshana S, Ndlovu P, et al. Barriers to uptake of cervical cancer screening services in low-and-middle-income countries: a systematic review. BMC Womens Health. 2022;22(1):486. doi:10.1186/s12905-022-02043-y. PMID:36461001.
5. Tin KN, Ngamjarus C, Rattanakanokchai S, Sothornwit J, Aue-Aungkul A, Paing AK, et al. Interventions to increase the uptake of cervical cancer screening in low- and middle-income countries: a systematic review and meta-analysis. BMC Womens Health. 2023;23(1):120. doi:10.1186/s12905-023-02265-8. PMID:36959632.
6. Goff BA, Mandel LS, Drescher CW, Urban N, Gough S, Schurman KM, et al. Development of an ovarian cancer symptom index: possibilities for earlier detection. Cancer. 2007;109(2):221–7. doi:10.1002/cncr.22371. PMID:17154394.
7. Öztürk R, Bakir S, Kazankaya F, Paker S, Ertem G. Awareness about gynecologic cancers and related factors among healthy women: a cross-sectional study. Soc Work Public Health. 2021;36(7–8):847–56. doi:10.1080/19371918.2021.1965936. PMID:34433370.
8. Elshami M, Tuffaha A, Yaseen A, et al. Awareness of ovarian cancer risk and protective factors: a national cross-sectional study from Palestine. PLoS One. 2022;17(3):e0265452. doi:10.1371/journal.pone.0265452. PMID:35312720.
9. Barry JA, Azizia MM, Hardiman PJ. Risk of endometrial, ovarian and breast cancer in women with polycystic ovary syndrome: a systematic review and meta-analysis. Hum Reprod Update. 2014;20(5):748–58. doi:10.1093/humupd/dmu012. PMID:24688118.
10. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. PLoS Med. 2007;4(10):e296. doi:10.1371/journal.pmed.0040296.

Copyright *Author (s) 2026. Distributed under Creative Commons CC BY 4.0*
Received*: 16-09-2026 -* ***Accepted****: 14-11-2026 -* ***Published****: 12-11-2026*