



FACTORS ASSOCIATED WITH HUSBANDS' SUPPORT FOR CERVICAL CANCER EARLY DETECTION: AN ANALYSIS OF DEMOGRAPHIC CHARACTERISTICS, KNOWLEDGE, AND ATTITUDES

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ABSTRACT

Cervical cancer is a serious public health problem. Early detection through Visual Inspection with Acetic Acid (VIA) or Pap smear is important for identifying precancerous lesions and cervical cancer at an early stage. Husband's support plays an important role in women's participation in screening. However, studies examining factors associated with husband's support, particularly those simultaneously assessing demographic characteristics, knowledge, and attitudes in the context of primary health care in Indonesia, remain limited. This study aimed to analyze factors associated with husband's support for cervical cancer early detection. An analytic observational study with a cross-sectional design was conducted among 150 husbands in the working area of Jagir Public Health Center using a structured questionnaire. Data were analyzed using the Chi-square test and Prevalence Ratio (PR). Demographic factors were not significantly associated with husband's support ($p > 0.05$). Knowledge and attitudes were significantly associated with husband's support ($p < 0.001$). Husbands with good knowledge were twice as likely to provide support compared with those with poor knowledge (PR = 2.0; 95% CI: 1.41–2.84). Positive attitudes showed the strongest association with husband's support (PR = 7.1; 95% CI: 3.67–13.76). Knowledge and attitudes were significantly associated with husband's support for cervical cancer early detection. Health workers should strengthen education on cervical cancer early detection by involving husbands through a family-based approach to support women's participation in screening.

Keywords: early detection; husband's support; cervical cancer; knowledge; attitude

INTRODUCTION

Cervical cancer is a major cause of morbidity and mortality among women, particularly in developing countries (WHO, 2024). Almost all cervical cancer cases (99.7%) are caused by infection with Human Papillomavirus (HPV), particularly HPV types 16 and 18 (Hamzah et al., 2021). According to the GLOBOCAN 2023 report, cervical cancer ranks as the second most common cancer among women in Indonesia after breast cancer, accounting for approximately 17.2% of all cancer cases among women (Novalia, 2023). In 2024, an estimated 36,633 new cases and 18,279 deaths occurred, indicating a mortality rate of approximately 50% (Rochmaedah et al., 2024).

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The Indonesian government has implemented an HPV vaccination program since 2016; however, vaccination coverage remains suboptimal. By 2024, vaccination coverage had reached approximately 65% among adolescent girls, with higher coverage in urban areas, whereas coverage in rural and remote areas was only around 40% (Pratiwi et al., 2024; Sono, 2024). In addition, women's participation in early detection programs, such as Pap smear and Visual Inspection with Acetic Acid (VIA), remains low. Only approximately 10% of women aged 30–50 years undergo routine screening, which is influenced by low awareness, social stigma, and limited access to health services (Faiyah, 2022).

Cervical cancer can be prevented through early detection, which enables the identification of precancerous changes (Setianingsih et al., 2022). The Indonesian government currently relies on VIA testing at primary health centers as a mass screening strategy (Salam et al., 2024). Early detection through VIA and Pap smear has been shown to be effective in reducing the incidence and mortality of cervical cancer (Globocan, 2023). However, participation in screening programs remains low due to limited knowledge, stigma, and barriers to access (Kemenkes RI, 2023). The success of these programs is strongly influenced by women's participation. One factor associated with women's participation is husband or partner support. Such support is important because women's health-related decisions, particularly in communities with traditional gender norms, often depend on husbands' approval or motivation (Pokharel and Pokharel, 2023).

Husband's support is important because men play a role in family decision-making (Okafor *et al.*, 2023). Male involvement has been shown to be significantly associated with women's willingness to undergo cervical cancer screening (Dsouza et al., 2022; Maseko et al., 2024). Several factors may be associated with husband's support, including knowledge, education, economic conditions, occupation, and sociocultural norms (Yuliani, 2023). Husbands with higher levels of knowledge and education tend to provide more active support. Family economic conditions may affect the ability to access screening services, while occupational characteristics may influence the availability of time to accompany their wives (Ayanto et al., 2024). Sociocultural norms also play an important role, as in some communities, women's health-related decisions are still determined by husbands or male family members (Enyan et al., 2024). Although previous studies have highlighted the importance of husbands' involvement in women's participation in cervical cancer screening, evidence regarding the factors associated with husbands' support remains limited, particularly in primary healthcare settings in Indonesia. In the working area of Jagir Public Health Center, understanding the relationship between demographic characteristics, knowledge, attitudes, and husbands' support is important for developing context-specific, family-based health promotion strategies. Therefore, this study aimed to analyze the association of demographic characteristics, knowledge, and attitudes with husband's support for cervical cancer early detection.

METHODS

An analytical observational study with a cross-sectional design was conducted in the catchment area of Jagir Public Health Center, Surabaya, Indonesia, which covers three urban villages: Sawunggaling, Darmo, and Jagir. A total of 150 husbands were selected using simple random sampling from the eligible study population.

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The independent variables comprised demographic characteristics, knowledge, and attitudes, while the dependent variable was husbands' support for cervical cancer early detection. The eligibility criteria, study period, and sampling frame should be reported in accordance with the original research protocol and field records.

Data were collected using a structured questionnaire developed by the researchers to assess participants' demographic characteristics, knowledge of cervical cancer and its early detection, attitudes toward early detection, and support for their wives' participation in cervical cancer screening. The questionnaire was tested for validity and reliability, with a Cronbach's alpha value greater than 0.70. The specific validity testing procedure, reliability coefficient for each scale, number of items, response options, and scoring criteria should be reported based on the original questionnaire and validation results

Data were analyzed using the Chi-square test to examine associations between the independent variables and husbands' support for cervical cancer early detection. Prevalence ratios (PRs) were calculated to quantify the relative prevalence of support across exposure groups. Statistical significance was set at $p < 0.05$. Where available, 95% confidence intervals should be reported for the PR estimates. Because the study used a cross-sectional design, exposure variables and husbands' support were measured at the same point in time. Accordingly, the PRs represent comparisons of the prevalence of support between exposure groups and do not estimate the incidence of a new outcome or establish a temporal relationship

The study received ethical approval from the Faculty of Health Sciences, Universitas Muhammadiyah Surabaya (Approval No. 026/KEPK/F/IV/FIK/2025). Participation was voluntary, and informed consent was obtained from participants before data collection.

RESULTS AND DISCUSSION

1. Respondent Characteristics

Table 1 presents the characteristics of the respondents, including age, education, age at marriage, number of children, occupation, and family income.

Table 1. Respondent Characteristics (n=150)

Variable	Frequency (n)	Percentage (%)
Husband's Age		
21-30 years	15	10,0
31-40 years	47	31,4
41-50 years	56	37,3
≥ 51 years	32	21,3
Husband's Education		
Primary (Elementary–Junior High School)	17	11,3
Secondary (Senior High School/Vocational High School)	103	68,7
Higher (Diploma/Bachelor's/Master's/Doctoral degree)	30	20,0
Husband's Age at Marriage		
≤ 20 years	6	4,0

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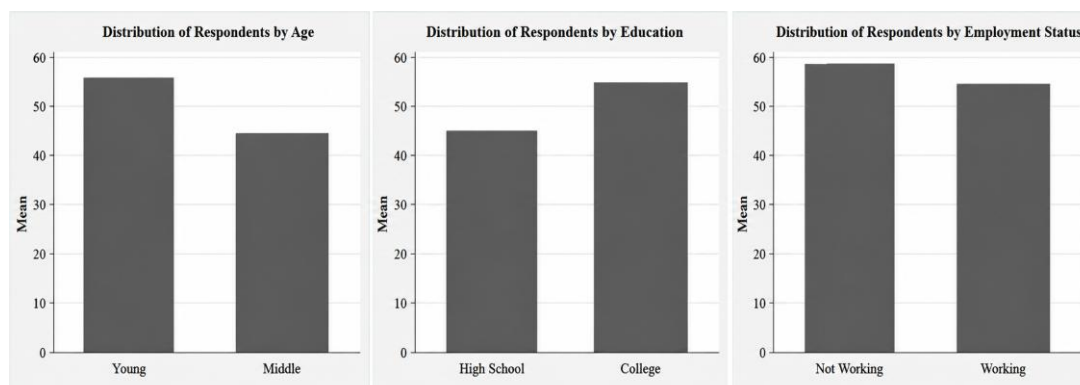
> 20 years	144	96,0
Number of Children		
1-2 children	106	70,7
≥ 3 children	44	29,3
Husband's Occupation		
Unemployed	9	6,0
Employed	141	94,0
Family Income		
< Regional Minimum Wage (UMR)	25	17
≥ Regional Minimum Wage (UMR)	125	83
Total	150	100,0

Source: Primary Data, 2025

Table 1 shows that most husbands were aged 41–50 years and had secondary education. Fewer respondents had higher education. Almost all respondents were married at an age above 20 years. In terms of family characteristics, most respondents had one to two children, and the majority of husbands were employed. Regarding economic conditions, most families (83%) had an income at or above the Surabaya City Regional Minimum Wage (UMK).

2. Distribution of Knowledge, Attitudes, and Husband's Support

Figure 1 presents the distribution of knowledge, attitudes, and husband's support for cervical cancer early detection.



Source: Primary Data, 2025

Figure 1. Distribution of Knowledge, Attitudes, and Husband's Support

Figure 1 shows the distribution of knowledge, attitudes, and husband's support for cervical cancer early detection. The first graph shows that most husbands had relatively poor knowledge, although the proportion with good knowledge was also substantial. The second graph shows that husbands' attitudes toward early detection tended to be positive, with more respondents demonstrating supportive attitudes than negative attitudes. Meanwhile, the third graph shows that the majority of husbands provided support to their wives for cervical cancer early detection, although some husbands did not provide support.

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3. Association of Knowledge, Attitudes, and Demographic Factors with Husband's Support

This section presents the association between husbands' knowledge and attitudes and demographic factors, including age, education, number of children, occupation, and income, with husband's support, as shown in Table 2.

Table 2. Association of Knowledge, Attitudes, and Demographic Factors with Husband's Support

Variable	Husband's Support				PR	95% CI	p-value
	Supporting		Not Supporting				
	n	%	n	%			
Husband's Knowledge							
Good	46	63,0	23	29,9	2,0	1,41-2,84	0,000
Poor	27	37,0	54	70,1			
Husband's Attitude							
Positive	65	89,0	15	19,5	7,1	3,67-13,76	0,000
Negative	8	11,0	62	80,5			
Husband's Age							
21-30 years	9	12,3	6	7,8	0,7	0,42-1,21	0,204
31-40 years	20	27,4	27	35,1			
41-50 years	30	41,1	26	33,8			
≥ 51 years	14	19,2	18	23,4			
Husband's Education							
Primary	9	12,3	8	10,4	0,9	0,54-1,44	0,613
Secondary	48	65,8	55	71,4			
Higher	16	21,9	14	18,2			
Number of Children							
1-2 children	52	71,2	54	70,1	0,9	0,67-1,40	0,883
≥ 3 children	21	28,8	23	29,9			
Husband's Occupation							
Unemployed	4	5,5	5	6,5	1,1	0,52-2,33	0,801
Employed	69	94,5	72	93,5			
Family Income							
< Regional Minimum Wage (UMR)	13	18,1	11	14,3	0,9	0,58-1,31	0,513
≥ Regional Minimum Wage (UMR)	59	81,9	66	85,7			

Note: PR = Prevalence Ratio; CI = Confidence Interval; n = Number of respondents; UMR = Regional Minimum Wage (Upah Minimum Regional). Percentages (%) are calculated within each husband's support category. The reference categories are indicated by blank PR and CI values. Statistical significance was set at $p < 0.05$; p-values reported as 0.000 should be presented as $p < 0.001$.

The analysis presented in Table 2 showed that husbands' knowledge and attitudes were significantly associated with husband's support. Husbands with good knowledge had a higher prevalence of providing support than those with poor knowledge (PR = 2.0; 95% CI: 1.41–2.84; $p < 0.001$). This

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indicates that husbands with good knowledge had twice the prevalence of providing support compared with those with poor knowledge.

In addition, positive attitudes among husbands showed a strong association with support. Husbands with positive attitudes had a higher prevalence of providing support than those with negative attitudes (PR = 7.1; 95% CI: 3.67–13.76; $p < 0.001$). This represented the strongest association observed in the analysis.

In contrast, demographic factors such as husband's age, education, number of children, occupational status, and family income were not significantly associated with husband's support ($p > 0.05$ for all categories). The PR values for the demographic variables were generally close to 1, with confidence intervals that were relatively wide and crossed 1, indicating no statistically significant association.

DISCUSSION

1. Respondent Characteristics

The demographic characteristics of the respondents showed that most husbands were aged 31–50 years, had secondary education, and were employed. Most families also had an income above the regional minimum wage. This composition is consistent with population surveys in many urban or semi-urban field studies, which have found a predominance of productive-age groups and secondary education among family-study participants. Such demographic characteristics are important because they provide the socioeconomic context in which family health decisions are made and implemented (Maseko et al., 2024; Okafor et al., 2023).

Most couples were in the productive-age group and had stable employment, which may facilitate access to health services, such as through financial flexibility and access to health information from the workplace. However, these characteristics do not necessarily guarantee adequate health knowledge, as reflected by the relatively low level of knowledge among some respondents.

2. Distribution of Knowledge, Attitudes, and Husband's Support

In this study, the proportion of husbands with good knowledge was smaller than that of husbands with poor knowledge. The findings indicate that a substantial proportion of husbands had limited knowledge about cervical cancer and its screening. This finding is consistent with several studies reporting that men's knowledge about cervical cancer is generally limited, particularly in low- and middle-income countries, although their attitudes toward supporting their wives may be positive. Cross-country studies have shown a similar pattern: knowledge may be limited, while willingness to provide support can remain high when men understand the benefits of screening for their wives (Osei et al., 2023; Maseko et al., 2024).

From a practical perspective, these findings indicate that health promotion programs should not target women alone. Education specifically designed for husbands, emphasizing the benefits of prevention, screening procedures such as VIA, Pap smear, or HPV testing, and practical ways to provide support, may potentially strengthen preventive health behaviors within the family. Intervention research has demonstrated that couple-based



education and counseling, including educating husbands about the importance of supporting and encouraging their wives, can increase cervical cancer screening uptake (Aryanto et al., 2024).

3. Association of Knowledge, Attitudes, and Demographic Factors with Husband's Support

The analysis revealed that husbands' knowledge and attitudes were significantly associated with their support for cervical cancer screening, whereas demographic factors, including age, education, number of children, occupation, and family income, showed no statistically significant associations.

Husbands with good knowledge were approximately twice as likely to provide support compared with those with poor knowledge (PR = 2.0; 95% CI: 1.41–2.84; $p < 0.001$). This finding suggests that adequate knowledge may contribute to husbands' understanding of cervical cancer risks, the importance of early detection, and the benefits of screening. Husbands who understand these aspects may be more willing to encourage their wives to undergo screening, provide relevant information, and facilitate access to healthcare services. This finding is consistent with previous research highlighting the importance of knowledge in promoting supportive partner behavior (Dsouza et al., 2022; Maseko et al., 2024).

Husbands' attitudes demonstrated a stronger association with support. Those with positive attitudes were approximately seven times as likely to provide support compared with husbands with negative attitudes (PR = 7.1; 95% CI: 3.67–13.76; $p < 0.001$). This finding indicates that favorable attitudes toward cervical cancer screening may be particularly important in encouraging supportive behavior. Positive attitudes may reflect husbands' acceptance of preventive healthcare, recognition of their role in supporting their wives, and willingness to participate in family health decisions. This relationship is consistent with the Theory of Planned Behavior, which identifies attitude as an important determinant of behavioral intention.

In contrast, husbands' age was not significantly associated with support. Although the proportion of supportive husbands varied across age categories, these differences were not statistically significant ($p > 0.05$). This suggests that chronological age alone may not adequately explain supportive behavior, as husbands across different age groups may demonstrate similar levels of involvement in their wives' reproductive health.

Similarly, educational attainment showed no significant association with husbands' support. Although formal education may facilitate access to health information, higher educational attainment does not necessarily translate into greater awareness of cervical cancer screening or more supportive attitudes. This finding suggests that specific health-related knowledge may be more relevant than general educational attainment in understanding husbands' supportive behavior.

The number of children was also not significantly associated with support (PR = 0.9; 95% CI: 0.67–1.40; $p = 0.883$). This indicates that husbands with larger families were not significantly more or less likely to provide support than those with fewer children. Family size, therefore, may not independently reflect husbands' awareness of cervical cancer prevention or their willingness to encourage screening.

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Husbands' occupation and family income were likewise not significantly associated with support ($p = 0.801$ and $p = 0.513$, respectively). Although employment and household income may influence financial resources and healthcare accessibility, these socioeconomic characteristics were not significantly related to supportive behavior in the present study. This suggests that financial capacity alone may be insufficient to explain husbands' involvement in cervical cancer screening decisions.

In the authors' view, the stronger association observed for attitudes compared with knowledge suggests that understanding cervical cancer screening may not necessarily translate into supportive behavior unless accompanied by favorable beliefs and acceptance of screening. Knowledge provides a cognitive foundation, whereas positive attitudes may encourage husbands to translate that understanding into practical support, such as discussing screening with their wives, providing encouragement, or facilitating healthcare visits. The absence of significant associations with demographic characteristics further suggests that supportive behavior may be more closely related to modifiable cognitive and psychosocial factors than to socioeconomic background alone.

These findings have practical implications for cervical cancer prevention programs. Educational interventions targeting husbands should not be limited to disseminating information about cervical cancer and screening procedures but should also address misconceptions, perceived barriers, and attitudes toward women's preventive healthcare. Involving husbands in couple-based counseling and community health education may help strengthen their supportive role. Nevertheless, given the observational nature of this study, the identified associations should not be interpreted as evidence of causality, and further research is needed to establish whether improving husbands' knowledge and attitudes leads to increased support for cervical cancer screening.

4. Program Implications

The findings provide evidence that increasing husbands' knowledge should be considered in cervical cancer prevention programs. Family education programs, information sessions at public health centers, and community-based approaches involving men may strengthen partner support.

Interventions combining knowledge-based materials with approaches that strengthen positive attitudes toward screening, such as addressing stigma and emphasizing the role of men as supportive partners, may be particularly relevant. Intervention studies in Indonesia and other countries have reported increased screening uptake when husbands were involved in education (Aryanto et al., 2024).

Tailored communication should consider more than demographic characteristics. Because demographic factors were not significantly associated with support in this study, programs may prioritize cognitive and affective factors, particularly knowledge and attitudes, rather than targeting specific age or educational groups alone. Nevertheless, communication strategies can still be adapted according to the preferences of different age or occupational groups, such as providing brief educational materials through workplaces for busy husbands. Studies on men's motivation have also emphasized adapting



health messages to cultural context and health literacy (Dsouza *et al.*, 2022; Mantula and Toefy, 2023).

The findings are also relevant to Indonesia's cervical cancer elimination strategy, which aims to increase HPV vaccination coverage among adolescent girls and cervical cancer screening uptake among eligible women. Achieving these targets requires the involvement of healthcare providers, community health workers, husbands, families, and other community stakeholders in promoting awareness, encouraging participation, and facilitating access to preventive services. Based on the findings of this study, efforts to increase husbands' participation in cervical cancer prevention should focus on improving their knowledge and fostering supportive attitudes toward cervical cancer early detection. Public health centers could implement targeted health education programs for husbands through couple-based counseling, husbands' participation in antenatal or family health education sessions, and community-based discussions involving male community leaders. The educational materials should address the causes and risk factors of cervical cancer, the importance of early detection, available screening methods, and the role of husbands in providing emotional, informational, and practical support to their wives. In addition, health workers could provide invitations or reminders encouraging husbands to accompany their wives during screening visits. These strategies may help improve husbands' understanding, reduce misconceptions, and strengthen their willingness to support women's participation in cervical cancer early detection. Therefore, including husbands as an explicit target group in community-based health promotion programs may contribute to improved family support and broader screening coverage. National planning documents recommend strengthening public understanding of the roles of various interventions, which is consistent with the findings of this study (Kementerian Kesehatan RI, 2023).

5. Recommendations for Future Research

Future research should design and evaluate couple-based educational interventions, such as cluster randomized controlled trials (cluster-RCTs), to assess their effects on changes in knowledge, attitudes, and uptake of VIA, Pap smear, or HPV screening. Further research could also develop theory-based communication materials targeting men's attitudes and subjective norms to strengthen practical support, including accompaniment, financial support, and motivation. In addition, future studies should incorporate measures of the quality of support, including emotional, instrumental, and informational support, to better understand the mechanisms through which husband's support facilitates screening uptake.

CONCLUSION

This study found that husbands' knowledge and attitudes were associated with their support for cervical cancer early detection. These findings highlight the importance of improving husbands' understanding of cervical cancer prevention and fostering supportive attitudes through targeted health education, couple-based counseling, and community-based health promotion programs. Involving husbands in family health education activities and encouraging them to accompany their wives during screening visits may help strengthen family support for early detection.

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Several limitations should be considered when interpreting these findings. The cross-sectional design does not allow causal inference; therefore, the associations between knowledge, attitudes, and husbands' support cannot establish cause-and-effect relationships. Furthermore, the study was conducted in the working area of Jagir Public Health Center, which may limit the generalizability of the findings to other settings, particularly remote rural areas and regions outside Java. Questionnaire-based data collection may also have introduced social desirability bias, as respondents might have overreported their supportive behaviors. Future studies should involve broader populations and employ longitudinal or intervention designs to examine whether improvements in husbands' knowledge and attitudes lead to increased supportive behavior and women's participation in cervical cancer screening.

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