

Is an Educational Level Affect Women's Participation on Cervical Cancer Screening? *A Systematic Review*

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Abstract: Cervical cancer became fourth most common cancer case among women in the world. There were approximately 528.000 new cases in 2012. Screening is the most proven method to prevent cervical cancer. Level of education seems to be an important predictor of cancer screening participation. Nowadays, there is a little strong evidence of this specific association. Therefore, a systematic review is necessary. This review was guided by PICO framework to identified appropriate resources for relevant study. Search of the studies were carried out by Pro-Quest and Medline, with keywords: "cervical cancer screening", "Pap smear", "VIA" "screening program", "socioeconomic factors", "educational level" and "screening participation". From 904 studies found, 13 included for review. 11 of 13 (84,6%) reported that level of education were positively associated with women's participation on cervical cancer screening, and only 2 studies reported that there is no association. This review conclude that women with higher educational level are more likely to participate cervical cancer screening.

1 BACKGROUND

Cervical cancer became fourth most common cancer among women and seventh in all cancer all over the world. There were approximately 528.000 new cases in 2012. In Western countries, cervical cancer prevention effort was done by increasing HPV vaccination (Cullen, Stokley, & Markowitz, 2014). However, screening is the most proven method for reducing rates of cervical cancer (de Blasio, Neilson, Klemp, & Skjeldestad, 2012). There were some evidences that Pap Smear, and VIA are associated with decreasing mortality of cervical cancer (Meggiolaro et al., 2016; Sankaranarayanan et al., 2007).

There are some recommendations for cervical cancer screening (Schwaiger, Aruda, LaCoursiere, Lynch, & Rubin, 2013). In general, cervical screening interval may once in 3 to 5 years (Schwaiger et al., 2013). Screening policy could affect screening participation. Other than that, there are more various factors as well as the characteristic of health system, sociocultural factors, environmental factors, invitation method, and individual factors such as age, occupation, and education. Notably, level of education is one of

health determinant that could be an important predictor of cancer screening participation (Damiani et al., 2012).

Although there were a lot of studies had found positive relationship between level of education and participation on cervical cancer screening, some of the results did not find statistically significant. Nowadays, the strong evidence for this relationship is still low. Therefore, this systematic review is necessary. This systematic review assessed the impact of educational level on women's participation on cervical cancer screening.

2 METHODS

The PICO framework was used to guide this systematic review, with P: sexually active women, with no symptom and history of female cancers, I: higher level of education, C: lower level of education, O: have ever done cervical cancer screening in their lifetime.

2.1 Search Strategy

Search of the studies were carried out by ProQuest and Medline, with keywords: “cervical cancer screening”, “Pap smear”, “VIA” “screening program”, “socioeconomic factors”, “educational level” and “screening participation”.

2.2 Assessment of the Studies

2.2.1 Eligibility

The inclusion criteria for this review:

- Studies published between 2008 – 2018,
- Articles published in English,
- The result section reported the relationship between level of education and cervical cancer screening participation.

The exclusion criteria for this review:

- Participants were women with history or family history of cervical cancer,
- Participants with other disease (e.g. diabetes).

Methodological Quality:

The quality assessment consisted:

- The design of the study,
- Data collection,
- Selected bias,
- Statistical analysis conformity.

Quality assessment was done by rating each item above as “strong”, “moderate”, or “weak”. As consequence, the study would be “high quality” if three of them were strong, with no weak. If there was only one weak, study would be “moderate quality”, and if there were more than one item rated weak, the study would be “low quality”.

2.2.2 Data Extraction

These following items were collected from each study:

- Author, years of publication
- Design of the study
- Population size and targeted age
- Outcome
- Educational level
- Relationship between educational level and screening participation

3 RESULTS

3.1 Included Studies

Twelve from Thirteen studies are cross sectional, and one is case control. Studies selected for this review obtained by the Swedish National Cervical Screening Registry (Broberg et al., 2018), Morehouse School of Medicine (Miles-Richardson, Allen, Claridy, Booker, & Gerbi, 2017), The KNHNES (Chang et al., 2017; Lee et al., 2013), WHO's Study on Global Ageing and Adult Health (Akinyemiju, Ogunsina, Sakhaja, Ogbhodo, & Braithwaite, 2016), GPMSSP (Gyulai et al., 2015), University of Pittsburgh (Alfaro et al., 2015), Karolinska Institutet (Östensson et al., 2015), New Americans Community Services, and University of Minnesota (Harcourt et al., 2014), European Health Interview Survey for Spain (Martín-López et al., 2012), ISTAT (Damiani et al., 2012), BRFSS and ARF (Coughlin, Leadbetter, Richards, & Sabatino, 2008), and the JCUSH (Blackwell, Martinez, & Gentleman, 2008).

Two studies were conducted in Sweden (Broberg et al., 2018; Östensson et al., 2015), four studies in US (Blackwell et al., 2008; Coughlin et al., 2008; Harcourt et al., 2014; Miles-Richardson et al., 2017), two studies in Korea (Chang et al., 2017; Lee et al., 2013), and the other respectively in Canada (Blackwell et al., 2008), El Salvador (Alfaro et al., 2015), Spain (Martín-López et al., 2012), Italy (Damiani et al., 2012), Hungary (Gyulai et al., 2015). Twenty two different populations were identified. Specifically, 10 studies analyzed one population, and 3 studies analyzed more.

3.2 Quality Assessment

Based on the design of the study, twelve studies rated “weak” due to cross sectional, and one study rated “moderate” due to case control. Based on their data collection, all studies rated “moderate” because obtained by surveys. Based on selection bias, ten studies rated “strong” (Akinyemiju et al., 2016; Blackwell et al., 2008; Broberg et al., 2018; Chang et al., 2017; Coughlin et al., 2008; Damiani et al., 2012; Gyulai et al., 2015; Lee et al., 2013; Martín-López et al., 2012; Miles-Richardson et al., 2017) because conducted nationwide and enrolled representative sample. Then, based on statistical analysis conformity, all studies rated “strong”. Overall, all studies are in moderate quality.

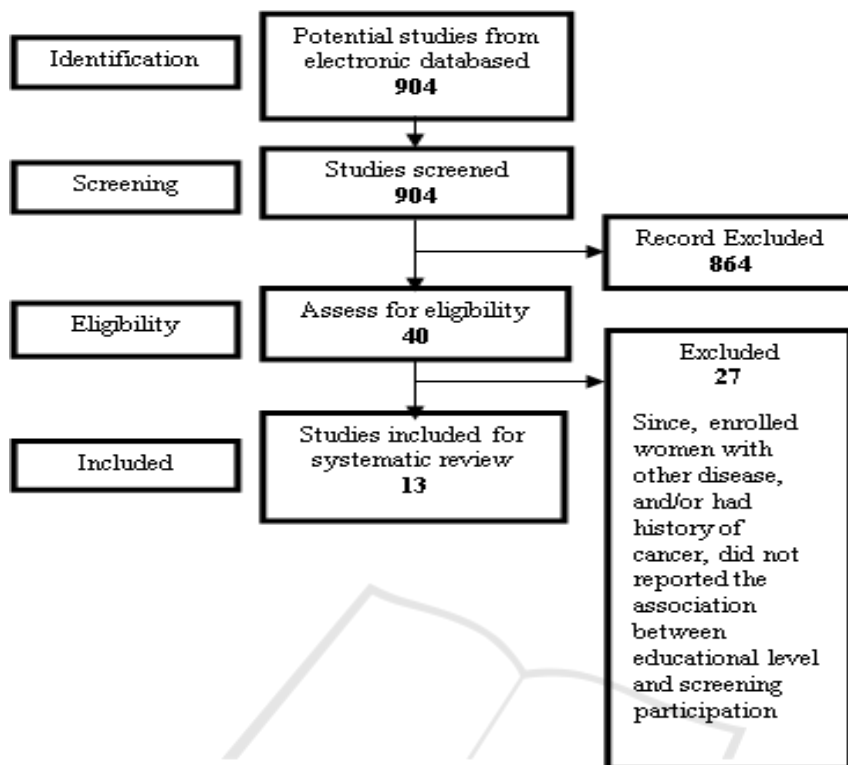


Figure 1: Review method.

3.3 Study Characteristic

Table 1: Study Characteristic.

No	Author, Year of Publication	Design	Populations, Targeted Age	Outcome	Educational Level	Relationship
1	(Broberg et al., 2018)	Case control	1 Sweden; Case; n=314.302 Control; n=266.706 30-60 years old	Attended pap smear test	1. ≤ 9 years 2. 10-12 years 3. > 12 years	Women with lower education were more likely to not attend cervical screening
2	(Chang et al., 2017)	Cross sectional	1 Korea; n=3.734 15-39 years old	Had pap smear test	1. < 6 years 2. 6-9 years 3. 10-12 years 4. >12 years	Higher educational levels associated with participation in cervical cancer screening
3	(Akinyemiju et al., 2016)	Cross sectional	5 China; n=8.002 India; n=7.489 Mexico; 1.689 Russia; n=2.676 South Africa; n=2.427 21-65 years old	Had pap smear test	1. No formal education 2. Primary 3. Secondary 4. University/college	education, significantly increased cervical cancer screening

4	(Alfaro et al., 2015)	Cross sectional	1 El Salvador; n=409 30-49 years old	Had cervical cancer screening	1. < Elementary 2. Middle school 3. > High school	There was no association between screening participation and educational level
5	(Östensson et al., 2015)	Cross sectional	1 Sweden; n=1.510 23-60 years old	Attended cervical cancer screening	1. < High-school 2. High-school or equal 3. > High-school	Educational levels positively associated with cervical cancer screening participation
6	(Harcourt et al., 2014)	Cross sectional	1 USA; n=421 ≥ 18 years old	Had cervical cancer screening	1. ≤ High school 2. > High school	There was no association between educational level and cervical cancer screening participation
7	(Martín-López et al., 2012)	Cross sectional	1 Spain; n=7.634 25-64 years old	Had Pap smear test	1. Primary 2. Secondary 3. University	Undergoing cervical cancer screening positively associated with higher educational levels
8	(Damiani et al., 2012)	Cross sectional	1 Italy; n=35.349 25-64 years old	Had 1 pap smear test	1. < Primary 2. Secondary 3. > high-school	Education level were positively associated with attendance to cervical cancer screening
9	(Coughlin et al., 2008)	Cross sectional	1 USA; n=97.820 ≥18 years old	Had Pap smear test	1. < high-school 2. High-school graduate/ GED 3. Some college/ technical school 4. College graduate	higher educational levels related to having cervical cancer screening
10	(Blackwell et al., 2008)	Cross sectional	2 Canada; n=1.895 US; n=2.959 18-69 years old	Had Pap smear test	1. < High-school 2. High-school Diploma/ GED 3. Vocational certificate 4. University	Educational levels predict compliance with cervical cancer screening in Canada (and nearly did in the US)
11	(Gyulai et al., 2015)	Cross sectional	1 Hungary; n= 1539 25-65 years old	Had pap smear test	1. Primary 2. Some Secondary 3. Secondary 4. Post-secondary without diploma 5. College / university	higher education increases participation
12	(Miles-Richardson et al., 2017)	Cross sectional	1 USA; n=272.692 ≥ 18 years old	Had pap smear test	1. ≤ high school 2. Some college 3. College graduate	women with higher level of education were more likely to be screened
13	(Lee et al., 2013)	Cross sectional	5 Korea; N=17.105 [1998]; n=2725 [2001]; n=1622 [2005]; n=2596 [2008]; n=2944 [2010]; n=2737 ≥30 years old	Participated cervical cancer screening	1. ≤ elementary 2. Middle – high school 3. ≥ university	Educational levels influenced screening participation. lower educational levels were less likely to be screened

4 DISCUSSION

This review found that 84,6% studies reported that women with higher level of education are more likely to participate cervical cancer screening compare with women with lower level of education. Overall, this review confirms that the risk of participating cervical cancer screening is affected by education.

Similar review found that there was positive association between educational level and some health-related behavior, one of them is screening participation (Cutler & Lleras-Muney, 2010). The reason is Well-educated women may have better interest, and better access to resources and information, so they have better knowledge about health issue and behavior to improve their health. Also, they have greater awareness of risks (Adams, 2010; Hahn & Truman, 2015). Simply, sufficiency of current knowledge has a positive influence on health-promoting behavioral options.

The argument of this finding is health literacy has positive association with level of education. Health literacy is an individual capacity to get, process, and figure out the necessary information and basic health service to determine health-related decisions. One of the important factor that can determine health literacy is level of education. People with higher educational level were found to demonstrated higher health literacy skill. (van der Heide et al., 2013). Well-educated people are more likely to completely understand the information and instructions. Furthermore, people with higher level of health literacy can increase the likelihood of communication to health care providers that can lead to better outcomes. Simply, low health literacy skill can be a barrier in access health information, health service, and disease prevention.

People with high capacity of health literacy also have a higher capacity to be informed that screening is necessary to prevent cervical cancer. This means that the association between educational level and some health behaviors – in this case cervical cancer screening participation – is affected by health literacy skill.

Cervical cancer screening participation is also affected by the type of health care system and its accessibility, screening policy, environmental, sociocultural, and factors at individual level such as age, race, insurance coverage and occupation (Blackwell et al., 2008; Coughlin et al., 2008; Damiani et al., 2012). In addition, cultural factors can predict cervical cancer screening participation and may be related with educational level. Some

studies reported that low cervical cancer screening participation was caused by low knowledge about screening guideline, along with various cultural factors, such as negative attitudes toward illness and misunderstanding about risk factors and screening practices (Cadet, Burke, Stewart, Howard, & Schonberg, 2017; Luque et al., 2015; Madhivanan, Valderrama, Krupp, & Ibanez, 2016). Furthermore, there is a correlation between cervical cancer screening and some of the health-related behaviors, including unhealthy diet, obesity, lack of physical activity, and tobacco and alcohol consumption (Damiani et al., 2012; Martín-López et al., 2012).

All factors above should be considered as they may lead to be confounders in the evaluation of the role of education level on cervical cancer screening participation. Nevertheless, all included studies conformed their analysis to those possible confounding factors.

5 CONCLUSIONS

Women with higher educational level have a higher risk to participate cervical cancer screening. This finding can be considered in decision-making processes to reduce the inequalities and increase women's participation on cervical cancer screening. Overall, this review confirms that more educated women are more likely to have cervical cancer screening.

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