ORIGINAL ARTICLE

Awareness of Cervical Cancer Among Women Attending King Faisal University Polyclinic, Saudi Arabia

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ABSTRACT

Introduction: Cervical cancer is responsible for women's morbidity and mortality throughout the world. In developing countries women usually present in advanced stage, awareness of cervical cancer can enhance women inclination towards regular cervical screening which can detect early pre-invasive lesions. The aim of the study was to assess the awareness of cervical cancer among King Faisal University community visiting gynecology clinic, Al Ahsa Saudi Arabia. **Methods:** A questionnaire oriented cross-sectional study was conducted and 385 females were enrolled by systematic random sampling. The questionnaire contained 14 questions about cervical cancer and six barrier statements for cervical screening. SPSS software version 26.0 was used for data entry and analysis. **Results:** Total 385 females participated in the study. Majority 73.2% (n=282) had heard about cervical cancer and found significant association with age 36-45yr (p=0.001), married with two children (p=0.003), employed (p=0.001), Master level education (p=0.001) and with Saudi nationality (p=0.028). Logistic regression revealed age increases likely hood of adequate knowledge almost by one fold (odds ratio 0.954, 95% CI: 0.925-0.984) and having Saudi nationality increases it by two folds (odds ratio 2.056, 95%CI: 1.228-3.440). Almost 80% were aware of screening test, 18.4% had undergone one time an opportunistic screening test. Significant proportion of Saudi nationals had heard of HPV vaccines (p= 0.04). **Conclusion:** Participants had adequate knowledge of cervical cancer but had low screening test practice. There is need to implement regular cervical screening practice at national level.

Keywords: Knowledge, Cervical cancer, HPV, Pap test, Saudi Arabia

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INTRODUCTION

Cervical cancer is the most common tumor affecting women throughout the world. It is a major cause of women morbidity and mortality in developing countries for not practicing regular cervical screening to identify precancerous cervical lesions, due to lack of proper infrastructure and low economic status. Mortality from cervical cancer has been considerably reduced in developed countries due to the implementation of cervical screening schedules and adolescent Human Papilloma Virus vaccination (1,2).

Human Papilloma virus (HPV) is responsible for more than 90 percent of cervical cancers and along with the presence of other cofactors like smoking, early age at first sexual intercourse, early age marriage, high parity, multiple sexual partners, use of combined contraceptive pills, HIV, immunosuppression states & Sexually Transmitted Diseases. HPV infection is acquired through sexual intimacy and more than hundred types have been isolated. Type 16, 18, 35 & 43 are high risk and are involved for 70 % of cervical cancer and in malignancies of vulva, vagina, anus, oropharynx and penis (3-5). HPV infection is more common in young age and resolves spontaneously in most cases but persistent infection in women can result in cervical intraepithelial neoplasia. Pap smear is a cervical screening test that takes cells from transformation zone to detect premalignant cervical intraepithelial neoplasia (CIN). Guidelines have been set up to deal an abnormal pap test, to carry out HPV testing and typing as a supplementary test with low grade CIN lesions cytology report for colposcopy referral (6,7). Cervical cancer may present with post coital bleeding, abnormal bleeding during pregnancy, postmenopausal bleeding, purulent blood stained vaginal discharge and pelvic pain. It can be diagnosed earlier due to its precancerous lesion CIN by performing cervical screening test for cytology even in asymptomatic women. If precancerous cervical condition not diagnosed and treated timely, it may

progress to invasive cervical cancer after 10- 20 years (8,9).

In 2019 HPV and cancer information report stated crude incidence rate of cervical cancer 2.2 % in Saudi Arabia which is comparatively less with Western Asia and other world. Cervical cancer is ninth female cancer in Saudi Arabia, its exact prevalence is not yet calculated but prevalence of HPV 16 & 18 with CIN I, CIN2 / CIN3 and cervical cancer is documented as 24, 52 and 76 percent. There is no proper national level cervical screening program implemented in Saudi Arabia yet and women usually present with advanced stage cervical cancer signs and symptoms (10).

Several studies have been conducted in Saudi Arabia on cervical awareness, role and type identification of Human Papilloma Virus. One of the study in Saudi Arabia stated that 43% of women were aware of cervical cancer and women of high educational status were more familiar with cervical cancer risk factors. Less than half had heard of pap test and more than half were not able to recognize its role in early detection of cervical cancer and only two women had undergone pap test (11). In another study in 2018 in Saudi Arabia showed 78.6% of females knew of cancer,16.4% recognized HPV causative agent and 35.9 % were aware of the screening test (12). A study in Riyadh evaluated the cervical cancer screening test awareness of Saudi females. Half of them have had heard of pap test but majority had not undergone testing while all of them almost interested to get knowledge of cervical screening test (13).

King Faisal University is a governmental university, established in 1975. Polyclinic serves as a primary health care center for all the KFU employees, their families, students of various colleges of the University and also for nearby residing Al Ahsa citizens. KFU Polyclinic was chosen as it is in vicinity of University, easily accessible and suitable venue to conduct study where almost every member from King Faisal University community and citizens of Al Ahsa report for minor to major ailments, therefore can provide us with adequate proportion of the targeted population of KFU community and Al Ahsa city. No cervical awareness study has been conducted here till now for non-medical community of KFU.

Studies conducted in Saudi Arabia have demonstrated females' fair awareness towards cervical cancer risk factors but has revealed decreased practice of screening test. The specific aim of this study is (i) to assess the awareness and knowledge of cervical cancer its risk factors, symptoms, prevention and HPV vaccine, (ii) to evaluate practice of cervical screening test and (iii) to determine barriers for not practicing cervical screening. Our study will add to the body of knowledge: the awareness of cervical cancer, cervical screening practices of gynecology clinic and females' barriers for the screening test. Results of the study will provide a guide to polyclinic administration, gynecologist and general physicians to implement and follow a policy for regular cervical screening.

MATERIALS AND METHODS

Study design
A questionnaire oriented cross-sectional study.

Sample size
A 385 sample size was calculated with online available population size calculator. http://www.raosoft.com/samplesize.html , keeping confidence interval 95% and margin of error 5%.

Sampling method
Systematic randomized sampling technique was applied to enroll patients in study. After selecting first participant randomly from gynecology clinic appointment list, then every next third patient was included in study.

Study area and population of study
Study was carried out in gynecological clinic of KFU Polyclinic Al Ahsa, Saudi Arabia. Polyclinic has its own pharmacy, laboratory and radiological diagnostic equipment. Females above 18 years of age, were included in study. Females who had cervical cancer, had undergone hysterectomy, doctors and undergraduate students of Medicine and Pharmacy Colleges were excluded from the study in order to assess general non-medical community of King Faisal University and also nearby residents of Al Ahsa city.

Data collection instrument
The questionnaire was structured after reviewing published studies and literature (14-16). The Questionnaire was constructed in English (for other nationals living here) and then also translated into Arabic native language. A pilot study was carried out before original research to check its reliability and feasibility. Cronbach's alpha was scored at 0.76 for the whole questionnaire which reflects good reliability and internal consistency of the items. (Cronbach's alpha is 0.79, 0.83, 0.72 and 0.76 for first, second, third and fourth parts of questionnaire items respectively). The questionnaire contained 14 close-ended questions and comprised of four main parts.

First part assessed sociodemographic characteristics like age, marital status, children, education, employment status and nationality. Second part had eight items that assessed knowledge about cervical cancer, and the sources of knowledge. Six risk factors and four common presenting symptoms of cervical cancer were listed to be chosen by the participants. Four ways of prevention were also listed to select. Third part contained five questions to evaluate the knowledge about Human Papilloma Virus and vaccine. Fourth part comprised of four questions to assess knowledge & practice of

cervical screening test and six barrier statements for not practicing cervical cancer screening. The participants had to choose one of the three options: Yes, No, and don't know for all leading questions. No and don't know merged together as No and assigned 0 score while Yes was allotted score 1. The total knowledge score for all questions was 25. Total score splitted into three score levels to categorize as low knowledge (0-5), adequate knowledge (6-13) excellent knowledge (14-25), (16).

Procedure of data collection

After completion of the consultation the questionnaire was handed to the enrolled woman by one of the trained nurse in corner place of the clinic. Woman was informed about study objectives which were well laid out on the paper sheet before the start of questionnaire. The verbal consent was taken before attempting study questionnaire. Any difficulty encountered during questionnaire filling was addressed at that time by the one of two gynecologist research members. It took 10-12min to complete the questionnaire by the woman herself in the clinic and was returned to research member and nurse. Data was collected daily in clinic and it took two months to gather the estimated sample size data. None of the female participants denied their enrolment in the study. All the collected data coded and entered in SPSS for analysis.

Statistical analysis

Study data analyzed with SPSS 26 version and applied descriptive statistics to retrieve frequencies, percentages, means & standard deviation. Chi square test and linear regression model were utilized to see associations & predictors of adequate knowledge respectively, p-value less than 0.05 will be taken for significance.

Ethical Considerations

Ethical approval was taken from the Graduate Studies & Scientific Research Committee of College of Medicine, KFU. (Research number: 2020 - 10 – 53). The participants were provided with study objectives and informed verbal consent was taken before attempting study questionnaire. Participants were explained about study objectives, which were mentioned before the start of the questionnaire. They were free to accept or decline and all were reassured that the information obtained would be kept anonymous and confidential. Participating in study with their own will, will be considered as their willingness. Polyclinic administration permission was also retrieved verbally for conducting study in gynecology clinic. Polyclinic administration was also ensured for the smooth conduction of gynecology clinic outpatient services by the research gynecologist during the study period.

RESULTS

Sociodemographic features

Three hundred and eighty-five females participated in the study. Majority of participants' age was between 25-35 years, with mean age 32.22 + 9.5 SD. Most of them were Saudi nationals 69% (n=266), married 79.5% (n=306), KFU employed / faculty constituted 42.3% (n=163) while 20% (n=77) were undergraduate female students from different colleges of the University other than medical and pharmacy colleges. Majority were educated, 19% (n=73) had Master degree, only 5.5% (n=21) had got primary education. Regarding parity only 0.5% had six children, 27.8% of females had no children while 27% had two children and 19% were unmarried, table displayed at Table I.

Table I: Socio-demographic characteristics of study participants (N=385)

Variables		Frequency N	Percent %
Age	<25	110	28.57
	25-35	120	31.16
	36-45	117	30.38
	>45	38	9.87
Education	Primary	21	5.5
	Intermediate	3	0.8
	high School	74	19.2
	Diploma	12	3.1
	Bachelor	68	17.7
	Master	73	19
	Ph. D.	58	15.1
	Students	76	19.7
Children	0	107	27.8
	1	58	15.1
	2	100	26
	3	72	18.7
	4	40	10.4
	5	6	1.6
	6	2	0.5
Nationality	Saudi	266	69.1
	Non-Saudi	119	30.9
Marital status	Married	306	79.5
	Single	73	19.0
	Widow	6	1.6
Occupation	Employed	163	42.3
	Unemployed	146	37.9
	Undergraduate female students	76	19.7

Knowledge about cervical cancer, risk factors, symptoms and prevention

Large number of females have had heard of cervical cancer 73.2% (p=0.0001), more than one quarter of participants had got information from news media 31.2% (p=0.0001), and 16.9 % (n=65) from family/ friends & neighbors.

Among the risk factors weak immune system was identified by 37% of females (p=0.0001) as risk factor for developing cervical cancer, 39.1% of female clients chosen HPV and 37.1% selected multiple sexual partners. Among the cervical cancer presentation symptoms, the highly selected symptoms were intermenstrual bleeding 42.1% (n=162) and postmenopausal bleeding 30.6%. Some of the participants were not very sure for all the risk factors and cancer symptoms therefore having had selected one or two of them also had selected the option

of don't know 50.6% (n=195) and 48.6 % (n=185) respectively.

Cervical cancer is not preventable selected by 78.2% (p=0.001) of participant females. When asked for preventive measures almost equal proportion of females 99% & 99.5% had chosen avoiding multiple sexual partners and early age at sexual intercourse as preventive measures for avoiding cervical cancer respectively which was found statistically significant (p=0.002). Majority chose intermenstrual bleeding among the listed presenting symptoms of cervical cancer (p= 0.0001). Almost 65% of the respondents had statistically significant adequate knowledge score with p value of 0.019, depicted in Table II.

Regarding Human Papilloma virus majority (70%) did not knew, (p=0.001) whereas 29.9 % (n=115) had got the cognition for human papilloma virus while none of them was vaccinated with its vaccine. A large proportion of females did not endorse HPV vaccine role in cervical cancer prevention (p= 0.007) whereas one third, 34.8% had believed that HPV vaccine could have a prophylactic role against cervical cancer (Table III).

Knowledge and Practice attitude for cervical screening

Two third of participants (76.9%) affirmed the existence of a cervical screening test with statistical significance of 0.001. Most of them did not know the name of screening test and one quarter of females had heard about Pap test. Majority of them (71%) were not aware that cervical cancer can be detected in its early precancerous stage (p=0.008). Only Seventy-one females had practiced cervical screening once up till now while significant number have not done (p=0.0001). The most common practice barrier statement chosen by the study participants for not doing Pap test was "I did not see the need to do it" found statistically significant (p= 0.019) shown in Table IV.

Results of logistic regression model for predictors of adequate knowledge about cervical cancer based on our participant group are shown in Table V . The age and nationality of the participants were found significant predictors. Controlling for other factors; age increases the likelihood for good knowledge by almost one-fold (odds ratio, 0.954, 95% confidence interval [CI]: 0.925-0.984), and having a Saudi nationality increases it by almost two-fold (odds ratio, 2.056, 95% CI: 1.228-3.440), p-value<0.05.

There was a significant relationship between knowing about cervical cancer and Master level education of the participants (p=0.001). In addition, information about cervical cancer was found correlated with females having two children (p=0.003) and with Saudi nationality (p=0.028). Knowing about cervical cancer was correlated with employed participants (p= 0.001) and with participants who aged 36-45 years (p=0.001).

Table II: Participants Knowledge about cervical cancer.

Knowledge variables		Frequency N	Percent %	P value
Do you know about cervical cancer?	No	103	26.8	**0.0001**
	Yes	282	73.2	
From where you heard about it?	No source of knowledge	81	21.0	**0.0001**
	News media	120	31.2	
	brouchers, posters	31	8.1	
	Healthcare persons	43	11.2	
	Family, friends, neighbours	65	16.9	
	school/ college	23	6.0	
	Internet	22	5.7	
Risk factors	Early onset of sexual activity	52	13.5	**0.0001**
	Smoking	50	13.0	
	Infection by HPV	123	31.9	
	Weak Immune system	143	37.1	
	Multiple sexual partners	122	31.7	
	Long use of OCPs	92	23.9	
	I don't Know	187	48.6	
Is cervical cancer pre-ventable?	**No**	301	78.2	**0.001**
	Yes	84	21.8	
Prevention methods	Avoid multiple sexual partners	381	99.0	**0.00**2
	Avoid early sexual intercourse	383	99.5	
	Quit smoking	48	12.5	
	Regular cervical screening and treatment	131	34.0	
	I don't Know	273	70.9	
Presenting Symptoms	**Bleeding intermenstrual**	162	42.1	**0.0001**
	postmenopausal bleeding	118	30.6	
	Post coital Bleeding	109	28.3	
	Vaginal offensive discharge	115	29.9	
	I don't know	195	50.6	
Knowledge score levels	Low knowledge (0-5)	124	32.2	0.019
Total score 25	Adequate knowledge (6-13)	250	64.9	
	Excellent knowledge (14-25)	11	2.9	

Table III: Participants Knowledge about HPV and vaccine

Knowledge statements		Frequency	Percent	P value
Have you heard about HPV?	**No**	270	70.1	**0.001**
	Yes	115	29.9	
HPV is the main causative agent of cervical cancer	**No**	256	66.5	**0.004**
	Yes	129	33.5	
Have you heard about HPV Vaccine?	**No**	255	66.2	**0.008**
	Yes	130	33.8	
HPV vaccine can prevent cervical cancer	**No**	251	65.2	**0.007**
	Yes	134	34.8	
Have you received HPV vaccine?	No	385	100	

Table IV: Practice, Knowledge and Barriers of cervical cancer screening

Variables	Frequency N	Percent %	P value
Is there any screening test for cervical cancer			
No	89	23.1	**0.001**
Yes	296	76.9	
Have you heard about Pap test			
No	284	73.8	**0.004**
Yes	101	26.2	
Cervical cancer can be early detected by Pap test			
No	273	70.9	**0.008**
Yes	112	29.1	
Have you done Pap test before			
No	314	81.6	**0.0001**
Yes	71	18.4	
Barriers for Pap Test			
I am single	73	19.0	**0.01**9
I don't see a reason to do it	101	26.2	
I don't know where Pap smear screening is done	37	9.6	
I think it's very expensive	18	4.6	
I would be worried if I was to have early signs of cancer (pre-cancer lesions)	38	9.9	
Doctor did not advise for screening test	58	15.1	

Significant number of Saudi participants had heard about HPV Vaccine (p=0.04). Hearing about Pap test was correlated with Master level education (p= 0.001), employed participants (p=0.001), and with participants who aged 36-45 years (p= 0.002) (TableVI).

Table VI: Association of dependent categorical variables with independent socio-demographic characteristics

Variables	chi square	p value
Education * Do you know about cervical cancer	25.94	0.001
Education * Have you heard about Pap test	47.33	0.001
Children * Do you know about cervical cancer	19.79	0.003
Nationality * Do you know about cervical cancer	4.84	0.028
Nationality * Have you heard about HPV Vaccine	4.22	0.040
Occupation * Do you know about cervical cancer	17.36	0.001
Occupation * Have you heard about Pap test	14.53	0.001
Age * Do you know about cervical cancer	15.97	0.001
Age * Have you heard about Pap test	14.85	0.002

DISCUSSION

Participants of our study displayed an adequate level of knowledge about cervical cancer. Our study has comprised of heterogeneous group of literate females. Majority of females had high educational degrees as many of them were teaching faculty and administrative personals of University. In this clinic study significant percentage of visiting females had the awareness of cervical cancer, identified weak immune system, multiple sexual partners and early age sexual intercourse as risk factors. They were aware of the screening test

Table V: Logistic Regression for Predictors of cervical cancer knowledge

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	**Age**	-.047-	.016	9.069	1	**.003**	.954	.925	.984
	Education	-.097-	.058	2.801	1	.094	.908	.811	1.017
	Children	-.092-	.092	1.009	1	.315	.912	.762	1.092
	Nationality	.721	.263	7.523	1	**.006**	2.056	1.228	3.440
	Marital status	-.225-	.238	.890	1	.345	.799	.501	1.274
	Occupation	-.054-	.180	.091	1	.762	.947	.666	1.347
	Constant	1.362	.845	2.600	1	.107	3.904		

a. Variable(s) entered on step 1: Age, Education, Children, Nationality, Marital status, Occupation.

but less than one quarter had practiced it only as an opportunistic screening test. Majority felt themselves healthy therefore did not feel the need to undergo cervical screening. They depicted low knowledge for HPV in reference its role in cervical cancer. Almost similar results are found in one study conducted in southern region of Saudi Arabia, where majority of women had knowledge of cervical cancer because of participants' high educational status therefore were also aware of its risk factors while nearly half of the participants have had heard of pap test but majority did not identify it a tool for early detection of cervical cancer. (11) Another awareness study conducted in Mecca, Saudi Arabia, found good knowledge as more than three quarters of female had heard of cervical cancer, more than one third knew screening test and less than one third knew of HPV. Their results are very similar to our study (12).

The results of study in Qassim city of Saudi Arabia also resembled our study results. Their study also revealed educated female participants, 79% had information about cervical cancer but majority were not knowing of Human Papilloma virus and more than half believed that HPV vaccine had a protective role against cervical cancer. Irregular bleeding was a frequently selected symptom by the participants. Despite of the fact that majority were educated females, had shown negative attitude for screening and HPV vaccination (17).

In Saudi Arabia literacy rate is remarkable and community engagement programs for health issues are regularly held as per health ministry and institutional recommendations. That's why even the general population in Saudi Arabia has a fair awareness on many common important health issues. Lack of doctor's recommendation for cervical screening was noticed in many studies including ours which explains the low uptake of screening test by women as they had not been asked to go for it.

Another study in Riyadh, Saudi Arabia (18) has also assessed awareness of Saudi women & healthcare providers towards cervical cancer and perception attitude for HPV vaccine. It also has found majority of the physicians did not practice cervical screening and most women had internal self-false sense of security of feeling healthy therefore no need of cervical screening with only 8% underwent screening. Larger proportion of women did not have the information for early detection of cervical cancer. Contrary to this our study Saudi females had a little better aware of HPV vaccine, one third believed that it can help preventing cervical cancer although none of them was vaccinated and same proportion were aware of the early cancer detection.

In Saudi Arabia a recent study (19) revealed very low awareness of cervical cancer and its risk factors among participant women of Najran city. Probably awareness strategies on news and social media would had been less utilized by these females. Majority had high education level, were familiar with the screening test but less proportion of women had done screening test which is almost consistent finding in most of studies including ours as there is no cervical screening program or policy devised by Saudi health administration yet.

A study conducted on urban community of south India has assessed knowledge of cervical cancer and prevalence of its screening test. Very few percentage of women who were above 40 years of age had displayed moderate awareness score and very less underwent opportunistic screening test as in our study but far more high percentage of women in the current study had adequate knowledge score. Most of the women had received only primary education. Low education status and less community oriented awareness campaigns seemed to be etiology of their low awareness level. (20) Another Indian study from Karnatka also revealed poor cervical knowledge and screening practices due to low education level (21).

In Ghana, a cervical cancer knowledge awareness study demonstrated more awareness in females than males. Most of them had selected post coital bleeding, purulent vaginal discharge and lower abdominal pain as cancer presentations. HPV and unprotected sexual intercourse was chosen by majority as risk factors. Their respondents had adequate awareness and were found willing for HPV vaccination as it is found consistent in African reviews studies. Cervical screening attitude and practices were not evaluated. In our study HPV knowledge was lower whereas the willingness for HPV vaccine was not acquired. (22). Majority of our participants had selected aforementioned risk factors and almost three quarters of our study females were also not familiar with the name (Pap test) of screening test.

Results from a study from Bahrain (23) at primary health clinic resembles our study in sociodemographic aspects regarding education and marital status and like our results more than half of their study participants did not know Pap test. There were very few who knew about HPV vaccines while more than one third had heard of vaccines in our study, but had a higher percentage that believed screening test can identify early pre-invasive cervical lesions which is contrary to our study. cancer has affected many nations due to lack of awareness and adherence to cervical screening especially in countries of low economic status as also have been reviewed in many research studies. It is the urgent need of time to provide women proper adequate awareness and prevention strategies by promoting awareness campaigns at national level and supply free of cost screening test to all married women throughout developing countries. In good resource countries like Saudi Arabia continuous education and to implementation of screening policy for

it.

The strength of our study is that it is one of the few studies which have focused on awareness of cervical cancer among general as well as non–medical community of King Faisal University, Al Asha. Limitation of our study includes its study design and the target population which doesn't allow to generalize its results for all Al-Ahsa population. It is not true representative of a Saudi population as it has included all the nationals living and working in Al Ahsa. Responding to study questionnaire in the presence of gynecologist, research member, in the clinic might had not allowed the respondents to refuse to participate. Therefore, free will of the respondents seemed to be compromised.

CONCLUSION

Study revealed that participants had adequate awareness of cervical cancer due to high educational status and also because of their involvement in the compulsory continuous medical education activities. Consistent finding of good knowledge but low screening test practices in other afore mentioned Saudi Arabian studies despite of availability of free of cost screening test, revealed that the health care providers didn't set it a regular practice to counsel and screen women attending gynecology clinic. The barriers for screening need to be removed by promoting awareness by the dealing physicians to ensure women adherence to regular screening. Practical implication for healthcare providers is to play a pivotal role in elaboration of the importance of Pap test in identification of early pre-invasive cervical cancer lesion. Health physicians especially gynecologist must need to adhere to perform or advise a regular cervical screening test schedule as per established guidelines by motivating females, hence will improve uptake of screening test.

We recommend cervical cancer awareness educational campaigns to provide basic information regarding cervical cancer and its screening test to all population of Al Ahsa. Health Ministry should consider implementation of regular cervical screening in better interest of the women health. Further studies should be conducted in all heath care centers and tertiary hospitals of Al Ahsa to evaluate cervical screening practices and barriers and to devise a solid future health policy.

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