RESEARCH COMMUNICATION

Screening and Perceived Severity of Cervical Cancer among Women Attending Mahalapye District Hospital, Botswana

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Abstract

    <u>Objectives</u>: The objectives of the study were to describe women's perceived severity to cervical cancer and its associations with socio-demographic characteristics. <u>Methods</u>: A cross-sectional study was conducted by a questionnaire survey with a total of 300 participants selected by convenience sampling techniques. <u>Results</u>: The participants' mean age was 37years (SD=11) and the cervical cancer screening rate was 39%. Most of the women were sure about the severity of cancer as they responded mostly agreeing or strongly agreeing with statements about severity of cervical cancer. The range of average responses was 2.58 to 3.56. When the ever screened and the never screened for cervical cancer was compared, it was observed that both groups equally believed that there is effective treatment for cervical cancer, and that cervical cancer makes a woman's life difficult. Overall, 60% of the never screened had low perceived severity while 33% of the screened had high perceived severity to cervical cancer. There was no significant association between perceived severity and screening for cervical cancer ($c2 = 1.0795$; $p = 0.2988$). Monthly income ($c2=13.077$; $p<0001$) and residential area ($c2=15.457$; $p=0.004$) were significantly associated with perceived severity. <u>Conclusion</u>: The screening rate is still far too low compared to the national target of greater than 75%. Therefore, despite awareness of the perceived severity of cervical cancer, the reasons why at risk women fail to participate in cervical cancer screening need to be adequately explored.

Key Words: Cervical cancer - perceived severity - screening - Botswana

Introduction

    Cervical cancer is the third most common form of cancer among women globally (Parkin et al., 1999). It is estimated that 493,000 new cases and 274,000 deaths occur every year due to this preventable disease (Ferlay et al., 2002). Cervical cancer is a major cause of mortality and morbidity among women in less developed countries including Botswana. A study found that cervical cancer is one of the most preventable human cancers, because of its slow progression, cytological identifiable precursors, and effective treatments (Lee et al., 2002). Therefore, Papanicolaou (Pap) cervical cytology screening has helped to reduce cervical cancer rates dramatically through early detection of premalignant lesions (Devesa et al., 1987; Nygard et al., 2002).

    In Botswana, the crude incidence rate of cervical cancer per 100,000 women is 19.8 and the annual number of new cervical cancer cases is 156 per 100,000 women. It is the second highest rate of cancer in Botswana after breast cancer (crude incidence rate of 21.4 per 100,000 women) (Ferlay et al., 2002). Despite been the second highest occurring type of cancer in Botswana, the crude mortality rate from cervical cancer remains the highest when compared to other types of cancers with a crude mortality rate of 15.9 per 100,000 women, followed by the crude mortality rate from breast cancer of 15.7 per 100,000 women (Ferlay et al., 2002). Furthermore, despite effective preventive and screening programs that are available in the country's health care system free of charge for cervical cancer screening, the annual number of deaths from cervical cancer in Botswana has remain high at 126 per 100,000 women (Ferlay et al., 2002). The Botswana government under the vision 2016 in collaboration with the Ministry of Health as a strategic objective: Health for all by 2016, introduced routine cervical cancer screening free of charge to all women attending public hospitals in 2003 in order to reduce the incidence of cervical cancer and therefore reduce mortality and morbidity resulting from cervical cancers.

    Worldwide, high incidences of cervical cancer are associated with lack of cervical cancer screening or lack of regular cervical cancer screening and follow up of abnormalities. Studies in Botswana reported that lack of cervical cancer screening or infrequent use of cervical cancer is noted for different reasons like lack of knowledge, access, financial constraints, etc (McFarland, 2003). Perceived severity to cervical cancer is a major factor that determines a woman's likelihood to do cervical cancer screening although attitudes of health providers,

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availability and cost are other important determinants (Burak and Meyer, 1997).

Most women know that cervical cancer is a serious disease and studies on the perceived severity of cervical cancer have been not conducted in many less developed countries (Austin et al., 2002). A survey on the severity of cervical cancer among adult females in Quebec found that 57% of women were afraid of developing cervical cancer sometime in their life, and 93% thought cervical cancer has serious consequences. Cervical cancer related anxiety and perceived seriousness did not vary by age group or level of education (Sauvageau et al., 2007). According to another study, 98% of college women felt that cervical cancer is a very serious condition and half of them think that it is not a treatable disease (Burak and Meyer, 1997). A study reported that 92% of women believed that cervical cancer is the second most serious type cancer a woman can have (first been breast cancer) and most women who develop cervical cancer certainly die from it (Price et al., 1996). Another study found that both participants of cervical cancer screening and non-participants of cervical cancer screening programs equally agreed that cervical cancer is a serious disease. The same study also found that twice the proportion in the participants group believed that cervical cancer is easily cured if identified early as opposed to the non-participant group who believed that cervical cancer is not treatable (Leyva et al., 2006).

If most women are aware that cervical cancer is a serious disease, the reasons why they do not expedite preventive measures like cervical cancer screening to prevent such a serious disease especially in less developed countries like Botswana needs to be explored especially as the service is provided at no cost. Therefore, the assumption is that if these screening services are available and accessible at no cost like the case in Botswana, the uptake of cervical cancer screening will depend largely on the perceived severity of cervical cancer. If the uptake is to be increased to achieve the desired goals, this issue must be recognised and taken into account when planning and implementing effective cervical cancer screening programs in order to reduce the mortality and morbidity resulting from cervical cancer. Therefore, determining ways of overcoming this problem is a pre-requisite for improving female uptake in cervical cancer screening program. Thus, the objectives of this study were to describe the women's perceived severity to cervical cancer and the association between socio-demographic characteristics and perceived severity to cervical cancer.

Materials and Methods

Study design, and Setting

The study was a cross sectional study. The study was conducted in Mahalapye District Hospital which is a 250 bedded hospital which offers outpatients and inpatients services to the Mahalapye sub-district community. It is one of the 6 district hospitals managed by the Ministry of Health in Botswana. It serves as a referral facility to 44 health facilities in the sub-district comprising one primary hospital, 15 clinics, 28 health post and mobile clinics

(Mahalapye District Health, 2005). Mahalapye sub-district has a total population of 109 811 people, comprising 53318 males and 56493 females (Botswana Census Report, 2001). The hospital is located in the central part of Botswana about 200km from Gaborone, along the A1 road that runs across the country from North to South. Mahalapye district Hospital was chosen because it runs both outpatients and in-patients services to both male and females. On average, approximately 180 to 240 patients are seen in out-patients daily, approximately 80 patients in Infectious Disease Control Centre (IDCC), and an average bed occupancy rate of 102 patients for in-patients cases (Mahalapye District Report, 2007). It has good information management system in place that enables the capturing and retrieval of relevant information with some degree of accuracy and reliability.

Population and Sample Size

The target population for the study comprised all women served by Mahalapye District Hospital who are above the age of 18 years. From the census report, Mahalapye sub-district has a total population of 109 811 people, comprising 53318 males and 56493 females (2001 population census Report). The female population of 56493 served by Mahalapye District Hospital of which approximately 2/3rd comprise the adult population (37 662) forms the target population of the study. Since out-patients department forms the entry point of patients to the hospital, sampled population were interviewed mainly at the out-patients department.

A minimum sample size was calculated using a standard formula for known population size for a cross sectional study. The formula is given below (Reid and Boore, 1991): $n = N/[1+N(e)^2]$
Where n= sample size of adjusted population, N= population size and e= accepted level of error taking alpha as 0.05.

The estimated number of women seen in Mahalapye District Hospital monthly was estimated from Hospital records to be about 800. Substituting this figure into the formula below, a sample size of 267 was obtained. However, since convenience sampling was used to interview the participants, the sample size was increased to 300 participants.

Sampling Procedure

Sampling was done by convenience sampling through approaching all eligible women who presented to outpatient department during the month of sample collection for interview (June, 2009). The purpose of the research and procedure was explained to them and those who consented to participate were interviewed. The researcher and the assistant ensured that no woman was interviewed more than once by asking if they have previously been interviewed. The researcher and the assistant also ensured that those women who participated are not of any particular characteristics but heterogeneous.

Inclusion and Exclusion Criteria

All adult women age above the age of 21years attending Mahalapye District Hospital, who consents to

participate in the study. All women aged below 21 years attending Mahalapye District Hospital, since they cannot give consent to participate according to Botswana law, and women above 21 years attending Mahalapye District Hospital who refuse to consent for participate in the study.

Data Collection Instrument and Data Collection

Structured questionnaire was the instrument to collect data. The perceived severity of cervical cancer was assessed using a scale formed by questions in the questionnaire. Each question was scored using a 5 point Likert type scale ranging from strongly agree (5) to strongly disagree (1). The scale was revised for negatively worded questions. Perceived severity of cervical cancer which is a subjective assessment of how serious cervical cancer is viewed by these women had a total score ranging from 6 to 30 from 6 items. The categorical dependent variable rated yes or no was whether a woman had ever had cervical cancer screening. If the answer was yes, she was asked if the cervical cancer screening was done within the past 3 years.

The questionnaire was translated to the local Setswana language and was pre-tested using 30 patients in another health facility outside Mahalapye by the researcher to identify gaps and modify the questionnaire appropriately. The questionnaire was then pilot tested and modified to ensure it answered the research questions.

The research assistant was trained by the researcher in conducting the interview and completing the questionnaires through role-playing and going through the process to be followed while completing the questionnaires for the participants. The interview was aimed at collecting answers to the questions in the questionnaire. The questions included questions assessing their participation in cervical cancer screening program, participants and non-participants perception regarding perceived severity to seeking cervical cancer screening as well as their socio-demographic characteristics.

Ethical Considerations

Ethical clearance for the study was obtained from Medunsa Campus Research and Ethics Committee. Permission to conduct the study was obtained from the National Health Research Unit (HRU) of the Ministry of Health, Botswana, and the Management of Mahalapye District Hospital before commencement of the study. Informed consent of participants was obtained. Confidentiality of participants was maintained at all times. To further maintain confidentiality no form of identifiers were in the questionnaires. Participation was voluntary and participants were informed that they can withdraw from the study at any stage of the interview if they so desire without any penalty.

Data analysis

Data were entered into a Microsoft Excel 2003 spreadsheet and imported to SPSS 17.0 for window version for analysis. The analysis results of participants' demographics and baseline outcome variables (both primary and secondary) were summarized using descriptive summary measures: expressed as mean

Table 1. Socio-demographic Characteristics

Variables		Number	Percentage
Age (years)	21-29	108	36.0
	31-39	78	26.0
	41-49	62	20.7
	51-59	52	17.3
Marital Status	Single	212	70.7
	Married	62	20.7
	Divorced	7	2.3
	Widowed	10	3.3
	Cohabiting	6	3.0
Educational Level	None	71	7.7
	Primary	21	23.0
	Secondary	2	40.3
	Tertiary	3	29.0
Employment Status	Unemployed	132	44.0
	Employed	168	56.0
Monthly Income	>P5000	49	16.3
	P3000-P4999	30	10.0
	P1000-P2999	51	17.0
	<P999	37	12.3
	None	133	44.3
Residential Area	Urban	54	18.0
	Peri-urban	91	30.3
	Rural	155	51.7

(standard deviation) or median (minimum-maximum) for continuous variables and percent for categorical variables. The chi-square test was used to find an association between categorical variables. Binary logistical regression was carried out to find the significant predictor for doing a Pap smear test. All statistical tests were performed using two-sided tests at the 0.05 level of significance. For all regression models, the results were expressed as effect (or odds ratios for binary outcomes), corresponding two-sided 95% confidence intervals and associated p-values. P-values were reported to three decimal places with values less than 0.001 reported as <0.001. A high score was considered 75% or more and a low score was considered as less than 75%.

Results

General

Table 1 summarizes socio-demographic characteristics of the study participants. A total of 300 participants were recruited with mean of 36.9 years (SD = 11.04).

Table 2 shows the distribution of cervical cancer screening status. Most of those that had ever screened for cervical cancer (64%) actually did the screening within the past 3 years. Most (72%) of the ever screened had attained at least secondary school education. Regarding age, the highest testing rates were among the age group 40-49.

Perceived severity of cervical cancer of women attending Mahalapye District Hospital

Table 3 summarizes data on perceived severity to cervical cancer of women attending Mahalapye District Hospital. In general most of the women were sure about the severity of cancer as they responded mostly agree or strongly agree to statements about severity of cervical cancer, with range of average responses being 2.58 to 3.56.

Table 2. Cervical Cancer Screening Status according to Socio-demographic Characteristics

	Screen ever		Past 3 years		Group Total	
	Yes	No	Yes	No	N	(%)
Total	39.3	60.7	64.4	35.6	300	100.0
Age (years)						
21 - 29	28.8	40.7	31.6	23.8	108	36.0
30 - 39	27.1	25.3	18.4	42.9	78	26.0
40 - 49	25.4	17.6	25.0	26.2	62	20.7
50 - 59	18.6	16.5	25.0	7.1	52	17.3
Marital status						
Single	68.6	72.0	67.1	71.4	212	70.7
Married	21.2	20.3	22.4	19.0	62	20.7
Divorced	2.5	2.2	3.9	-	7	2.3
Widow	5.1	2.2	3.9	7.1	10	3.3
Cohabiting	2.5	3.3	2.6	2.4	9	3.0
Educational level						
None	9.3	6.6	10.5	7.1	23	7.7
Primary	18.6	25.8	15.8	23.8	69	23.0
Secondary	39.8	40.7	32.9	52.4	121	40.3
Tertiary	32.2	26.9	40.8	16.7	87	29.0
Employment						
Unemployed	51.7	39.0	59.2	38.1	132	44.0
Employed	48.3	61.0	40.8	61.9	168	56.0
Monthly income						
> 5000	24.6	11.0	31.6	11.9	49	16.3
3000 - 4999	14.4	7.1	17.1	9.5	30	10.0
1000 - 2999	16.1	17.6	15.8	16.7	51	17.0
< 1000	10.2	13.7	9.2	11.9	37	12.3
None	34.7	50.5	26.3	50.0	133	44.3
Residence						
Urban	18.6	17.6	17.1	21.4	54	18.0
Peri-urban	42.4	22.5	48.7	31.0	91	30.3
Rural	39.0	59.9	34.2	47.6	155	51.7

In other words most women were aware of the severity of cervical cancer.

When the ever screened and the never screened for cervical cancer was compared, it was observed that both groups equally believed that there is effective treatments for cervical cancer, and that cervical cancer makes a woman's life difficult. Both the screened and the never screened believed that cervical cancer is as serious as other cancers; that it causes infertility and that death from cervical cancer is not rare (Table 4).

When the 'ever screened' group and never screened group were grouped into high and low based on scores of perceived severity (Table 5), overall, 60% of the never screened had low perceived severity while 33% of the screened had high perceived severity to cervical cancer. There was no significant association between perceived severity and screening for cervical cancer ($\chi2 = 1.0795$; $p = 0.2988$)

Table 3. Response to Statements of Perceived Severity

Severity	Rating (%):	SD	D	NS	A	SA	Average Response	Std Dev
Effective treatment for cancer		2.7	19.3	31.7	39.7	6.7	3.28	0.94
Cervical cancer makes woman's life difficult		3.7	16.3	12.7	54.7	12.7	3.56	1.02
Cervical cancer not serious as other cancers		24.0	26.3	23.3	20.3	6.0	2.58	1.22
Cervical cancer is easily cured		6.3	22.7	37.3	25.7	8.0	3.06	1.03
Cervical cancer can result in infertility		3.3	9.4	27.4	43.5	16.4	3.60	0.98
Death from cervical cancer is rare		9.7	19.1	33.6	27.9	9.7	3.09	1.12

SD, Strongly disagree; D, Disagree; NS, Not sure; A, Agree; SA, Strongly agree

Table 4. Screening Status according to Response to Statements of Perceived Severity

Perceived Severity	Cervical cancer screen ever (No. and %)					
	No		Yes		Total	
Effective treatment for cancer						
Strongly disagree	4	2.2	4	3.4	8	2.7
Disagree	24	13.2	34	28.8	58	19.3
Not sure	69	37.9	26	22.0	95	31.7
Agree	75	41.2	44	37.3	119	39.7
Strongly agree	10	5.5	10	8.5	20	6.7
Cervical cancer makes woman's life difficult						
Strongly disagree	8	4.4	3	2.5	11	3.7
Disagree	30	16.5	19	16.1	49	16.3
Not sure	19	10.4	19	16.1	38	12.7
Agree	102	56.0	62	52.5	164	54.7
Strongly agree	23	12.6	15	12.7	38	12.7
Cervical cancer not serious as other cancers						
Strongly disagree	34	18.7	38	32.2	72	24.0
Disagree	49	26.9	30	25.4	79	26.3
Not sure	57	31.3	13	11.0	70	23.3
Agree	34	18.7	27	22.9	61	20.3
Strongly agree	8	4.4	10	8.5	18	6.0
Cervical cancer is easily cured						
Strongly disagree	10	5.5	9	7.6	19	6.3
Disagree	30	16.5	38	32.2	68	22.7
Not sure	80	44.0	32	27.1	112	37.3
Agree	46	25.3	31	26.3	77	25.7
Strongly agree	16	8.8	8	6.8	24	8.0
Cervical cancer can result in infertility						
Strongly disagree	3	1.6	7	6.0	10	3.3
Disagree	19	10.4	9	7.7	28	9.4
Not sure	58	31.9	24	20.5	82	27.4
Agree	70	38.5	60	51.3	130	43.5
Strongly agree	32	17.6	17	14.5	49	16.4
Death from cervical cancer is rare						
Strongly disagree	13	7.2	16	13.7	29	9.7
Disagree	28	15.5	29	24.8	57	19.1
Not sure	68	37.6	32	27.4	100	33.6
Agree	53	29.3	30	25.6	83	27.9
Strongly agree	19	10.5	10	8.5	29	9.7

Association between socio-demographic characteristics and perceived severity of cervical cancer

Table 6 shows the association between socio-demographic characteristics and perceived severity to cervical cancer. As shown in the table, monthly income ($\chi2=13.077$; $p<0.001$) and residential area ($\chi2=15.457$; $p=0.004$) were significantly associated with perceived severity. Marital status ($\chi2=9.435$; $p=0.051$) and educational level ($\chi2=9.44$; $p=0.051$) were nearly statistical significant with p-value slightly greater than 0.05. All other socio-demographic variables were not significantly associated with perceived severity of cervical cancer.

Table 5. Perceived Severity according to Screening Status

Background/ severity		High**	Low*	Total
Cervical	Yes	14	102	116
Cancer	No	28	154	182
Screen?	Total	42	256	298

Odd Ratio = 0.69 (95% CI: 0.34-1.39) (χ2=1.079; p = 0.298)

*Low perceived severity<75% of total score; **High perceived severity ≥75% of total score

Table 6. Perceived Severity according to Socio-demographic Characteristics

Variable Statistic	Cervical cancer screen ever (No. and %)					
	No		Yes		Total	
Age (years)			χ2 =1.52, p=0.678			
21 - 29	79	37.4	28	31.8	107	35.8
30 - 39	56	26.5	22	25.0	78	26.1
40 - 49	42	19.9	20	22.7	62	20.7
50 - 59	34	16.1	18	20.5	52	17.4
Marital status			χ2=9.44; p=0.051			
Single	159	75.4	52	59.1	211	70.6
Married	37	17.5	25	28.4	62	20.7
Divorced	4	1.9	3	3.4	7	2.3
Widowed	7	3.3	3	3.4	10	3.3
Cohabiting	4	1.9	5	5.7	9	3.0
Educational level			χ2=9.44; p=0.051			
None	17	8.1	6	6.8	23	7.7
Primary	50	23.7	19	21.6	69	23.1
Secondary	87	41.2	33	37.5	120	40.1
Tertiary	57	27.0	30	34.1	87	29.1
Employment status			χ2=1.53; p=0.676			
Unemployed	79	37.4	53	60.2	132	44.1
Employed	132	62.6	35	39.8	167	55.9
Monthly income			χ2=13.1; p<0.001			
> 5000	27	12.8	22	25.0	49	16.4
3000 - 4999	17	8.1	13	14.8	30	10.0
1000 - 2999	33	15.6	18	20.5	51	17.1
< 1000	29	13.7	8	9.1	37	12.4
No income	105	49.8	27	30.7	132	44.1
Residential area			χ2=15.5, p=0.004			
Urban	40	19.0	14	15.9	54	18.1
Peri-urban	50	23.7	40	45.5	90	30.1
Rural	121	57.3	34	38.6	155	51.8

Independent-sample t-test was used to examine the difference in perceived severity between women who had ever screened for cervical cancer and women who never screened. Women who had never screened for cervical cancer had significantly higher perceived severity (t = -2.0; P = 0.045) than those screened for cervical cancer. Bivariate logistic regression was used to examine if perceived severity predicted screening for cervical cancer. Percieved severity was not a significant predictor for doing cervical cancer screening (OR = 0.511, p = 0.083).

Discussion

The cervical cancer screening status of research participants was found to be 39% of which 64% was done within the past 3 years. This cervical cancer screening rate is far too low and do not reach the Ministry of Health goal of cervical cancer screening of at least 75% or more. A similar study in Botswana found that only 40.0% of study participants had ever had Pap smear tests (McFarland, 2003). This finding of low participation of cervical cancer screening and low follow up of screening is consistent with most other studies done in less developed countries which reported a participation rate of 23% and follow up rates of 46% within 3 years (Carey and Gjerdingen, 1993, Lerman et al., 1991). Among others, the reason for low participation include at risk women not perceiving themselves as been susceptibility to cervical cancer provided they have no symptoms, lack of information about the benefits of cervical cancer screening and misconceptions like thinking it is painful, takes away virginity etc. Although most participants perceived cervical cancer as serious, the thought of believing that there was no treatment of cervical cancer, makes them uninterested to doing cervical cancer screening.

This study found that most women know that cervical cancer is a serious type of cancer as the majority either strongly agree or agree to positive questions about severity with a mean average response ranging from 2.58-3.56. This is consistence with a survey on the severity of cervical cancer among adult females in Quebec which reported that 57% of women were afraid of developing cervical cancer sometime in their life, and 93% thought cervical cancer has serious consequences (Sauvageau et al., 2007). This findings also agrees strongly with another study that reported that 98% of college women felt that cervical cancer is a very serious condition and half of them think that it is not a treatable disease (Burak and Meyer, 1997). A study found that 92% of women believed that cervical cancer is the second most serious type cancer a woman can have (first been breast cancer) and most women who develop cervical cancer certainly die from it (Price et al., 1996).

When the screened and the never screened were compared, both groups were found to either strongly agree or agree that there is no effective treatment for cervical cancer. This makes a woman's life difficult. Also causes infertility and think dead from cervical cancer is not rare. This agrees with studies reported that participants of cervical cancer screening believed that cervical cancer is easily cured if identified early as opposed to the non-participants who believed that cervical cancer is not treatable (Leyva et al., 2006). This study however found that both the ever screened and never screened believe there is no effective treatment for cervical cancer.

When perceived severity to cervical cancer screening was compared between participants and non-participants of cervical screening, no significant association between perceived severity of cervical cancer and cervical cancer screening was found. This differs with the hypothesis of the Health Belief Model that predicts that perceived seriousness of a disease necessitate people to engage in preventive actions. Therefore, majority of the participants are quiet aware that cervical cancer is a serious disease but the reasons why they fail to engage in preventive actions as predicted by the Health Belief Model needs to be further explored.

Nearly all the socio-demographic characteristics were significant with perceived severity of cervical cancer. This suggests that most people irrespective of their socio-

demographic characteristics are aware of the severity of cervical cancer. This is consistent with previous studies that found that most people are aware of the severity of cervical cancer but still do not take preventive actions by participating in cervical cancer screening programs (Burak and Meyer, 1997, Sauvageau et al., 2007, Price et al., 1996). Therefore, despite awareness of the perceived severity of cervical cancer, the reasons while at risk women fail to participate in cervical cancer screening needs to be adequately explored.

This study was limited by its cross-sectional design, use of self-report, and convenience sampling. Some woman in the sample may have felt sensitive to report negative results, introducing self bias. Study only looked at women attending Mahalapye District Hospital and hence, it may be difficult to extrapolate to the larger population or generalise the findings.

In conclusion, the rate of participation of cervical cancer screening among women attending Mahalapye District Hospital is still far too low compared to the National target of greater than 75%. Most women do not specially point out perceived barriers such as embarrassment, pain, lack of convenient clinic time, lack of information etc as barriers to seeking cervical cancer screening. Therefore, more work needs to be done aimed at increasing perceived severity to cervical cancer screening through provision of education/information, addressing misconception and beliefs as well as improving the socio-demographic condition through employment, education, monthly income and better residential area.

Acknowledgement

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