



**Suicide pattern in Kermanshah Province, West of Iran:
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From the Editor

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This issue of the journal contains an interesting review on predatory journals and conferences that have plagued the academic life cycle. The authors review the recent surge of such publications and their methods in the context of the commercialisation of education generally.

A paper from Qatar attempted to identify the deficits in the Knowledge, attitudes, and practice of female health care workers in primary healthcare centers in order to improve and raise their awareness of cervical cancer screening to the high level enough to provide the accurate information, good attitudes, and practice for cervical cancer screening. The authors followed descriptive cross sectional method to assess knowledge, attitudes and practices towards cervical cancer screening in 90 female health care workers working in Primary Health Care Centers in state of Qatar. Data collection was done using a self-administered questionnaire designated to assess knowledge, attitude and practices toward cervical cancer screening as well as factors influencing female healthcare workers (HCWs) to participate in the cervical cancer screening program and where the female healthcare workers (HCWs) would prefer to do the test and by whom. Data were analyzed using Epi Info software. Total sample include 90 female health care workers revealing 43.3 % were in age group 30-39 years, 91.1% were non Qatari, 81.1% were nurses. Among the participates 92.2 % had adequate Knowledge regarding cervical cancer risk factors. There is significant test results related to

knowledge of (Smoking, and Family History) as risk factors mainly among residents which reaches 100% compared to physician and nurses. The study results also showed that the most common factor influence to participate in the cervical cancer screening program are embarrassed (17.3%), Inadequate training (14.8%) and exposed by colleagues (13.6%). Among the participants, 94.5% preferred to conduct Pap smear test by female physicians either in Well women clinic in the primary health care centers (32.2%) or Gynecological clinic in hospital (27.8%). The authors concluded that most of participants group were nurses (81.1%). The present study shows inadequate levels of knowledge regarding the eligibility and screening interval (9%). They had good attitude towards cervical cancer screening but low practicing percentage. In addition, low percentage (32.2%) of them preferred to do pap smear in well woman clinics in primary care, and they preferred female doctors to do cervical cancer screening.

A paper from Egypt attempted to assess the prevalence and risk factors associated with impaired fasting glucose (IFG) in adult individuals. Berket Elsabee District was randomly selected out of eight districts of Menoufia Governorate, of which two family health units were randomly selected. The Randomized sample were selected from the attendants of these family health units for regular visits. 1255 subjects were randomly included in the study. The prevalence of IFG was 7.9 % (n= 99), of them 52.5 % (n=52) being males and 47.5% (n=73) being females, (OR =0.721, CI =0.477-1.089, p=0.12). The main risk factors associated with IFG were age (>45 years: p 0.003), being married (OR = 1.73, CI = 0.928 - 3.22, P value =0.001), rural resident (OR =0.71, CI =0.446-1.132, P value = 0.149). History of hypertension, hyperlipidemia and chronic viral hepatitis were significantly associated with higher percentage of isolated impaired fasting blood glucose. Body mass index and blood pressure values were positively correlated to levels of fasting blood group of the studied group. The authors concluded that prediabetes with isolated impaired fasting blood glucose level significantly related to

patient education, history of hyperlipidemia, blood pressure and Body mass index in the logistic regression model.

A paper from Dubai discussed the Integration of mental healthservice program into primary health care service. Primary health care is the main platform for community base health service. It is the first line of health defense. The primary health care services based on prevention, curative, promotion and rehabilitation. Mental health disorders is not uncommon and early detection and care may decrease the burden of these disorders. By integration the mental health care into primary care services, this services will be available at the level primary care and make it expose to considerable part of the community serve by primary health care services. The process of integration will allow the metal health care diffuse through the pillars of primary care ie prevention, curative, promotion and rehabilitation.

A paper from Iran aims to update the existing knowledge of suicide situations in the Kermanshah province in order to take the first step towards designing preventive interventions. Compared to the average suicide rate in Iran, Kermanshah province has a noticeably higher rate. Focusing on social determinants of health in the population should be seriously considered by the health system's policy-makers regarding practical approaches to be used for the purposes of reducing suicide.

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Knowledge, attitudes and practices regarding cervical cancer screening among Female health care workers in primary healthcare in Qatar

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Abstract

Background: Cervical cancer is the third most common cancer among women worldwide. The female health care workers who provide reproductive health care are one of the most important health knowledge providers and promoters.

Aim: The aim was to identify the deficits in the Knowledge, attitudes, and practice of female health care workers in primary healthcare centers in order to improve and raise their awareness of cervical cancer screening to a level high enough to provide accurate information, good attitudes, and practice for cervical cancer screening.

Objective(s):

(1) To assess the level of Knowledge, attitudes and practices (KAP) regarding cervical cancer screening among female healthcare workers (HCWs) in primary health care in Qatar.

(2) To examine factors influencing female health-care workers (HCWs) participation in the cervical cancer screening program.

(3) To determine where the female healthcare workers (HCWs) would prefer to do the test and by whom.

Methods: Descriptive cross sectional study was conducted to assess knowledge, attitudes and practices towards cervical cancer screening in 90 female health care workers working in Primary Health Care Centers in the state of Qatar. Data collection was done using a self-administered questionnaire designed to assess knowledge, attitude and practices toward cervical cancer screening as well as factors influencing female healthcare workers (HCWs) to participate in the cervical cancer screening program and where the female healthcare workers (HCWs) would prefer to do the test and by whom. Data were analyzed using Epi Info. software. Data analysis was applied to identify the statistical significant limit of $P < 0.05$.

Results: The total sample included 90 female health care workers revealing 43.3 % were in the age group 30-39 years, 91.1% were non Qatari, 81.1% were nurses. Among the participants 92.2 % had adequate Knowledge regarding cervical cancer risk factors (multiple partners, HPV, and family history), while less than 9 % knew the eligibility and screening interval for cervical cancer screening. Of the female participants, 57.8 % didn't feel they were at risk, 84.4% believed that they must be screened, 96.7 % were referred for cancer screening, and 42.2% had a pap smear before. There were significant test

results related to knowledge of (Smoking, and Family History) as risk factors mainly among residents which reaches 100% compared to physicians and nurses. The study results also showed that the most common factor influencing participation in the cervical cancer screening program are embarrassment (17.3%), inadequate training (14.8%) and exposed by colleagues (13.6%). Among the participants, 94.5% preferred to have a Pap smear test conducted by female physicians either in the Well women clinic in the primary health care centers (32.2%) or Gynecological clinic in hospital (27.8%).

Conclusion: Most of the participants group were nurses (81.1%). The present study shows inadequate levels of knowledge regarding the eligibility and screening interval (9%). They had a good attitude towards cervical cancer screening but a low practicing percentage. In addition, low percentage (32.2%) of them preferred to have a pap smear in well woman clinics in primary care and they preferred female doctors to do cervical cancer screening.

Key words: knowledge, Attitude and practice, cancer cervix, health care providers, screening, primary health care.

Introduction

Cervical cancer is the third most common cancer among women worldwide, with an estimated 83,195 new cases and 35,673 deaths in 2012[1]. In the developing countries, it is the leading cause of gynecological cancer related morbidity and mortality [2].

In Qatar 371,015 women are at risk for cervical cancer (Female population aged >15 years). The current estimates indicate that every year 15 women are diagnosed with cervical cancer and 4 die from the disease. Cervical cancer ranks as the 5th most frequent cancer among women in Qatar and the 6th most frequent cancer among women between 15 and 44 years of age [3].

Cervical cancer has a long premalignant period that provides the opportunity to screen and treat before it becomes invasive cervical cancer [4]. Along with this, it is largely preventable by effective screening programs and considerable reduction in cervical cancer incidence and deaths has been achieved with systematic cytological smear screening programs [5,6].

Primary prevention of cervical cancer aims at reducing the incidence of cervical cancer by controlling the causes as well as risk factors. Human papilloma virus, a common sexually transmitted infection, is the primary underlying

cause of cervical cancer. The risk factors for cervical cancer are multiple sexual partners, early age of onset of sexual activity, increasing parity, use of hormonal contraceptives for 5 years or longer,[7,8] current or previous sexually-transmitted infection[9] and smoking[10].

Despite the active role of health care workers to prevent cervical cancer, there are many obstacles faced by health care workers to promote cervical cancer screening. Lack of knowledge about the risk factors, causes, symptoms [12, 13, 14], ways of transmission [15, 16], screening intervals, and HPV vaccine [15] are the main obstacles, as well as poor attitude and practice for cervical cancer screening [17, 18, 19].

An assessment of health care workers' knowledge and practice of cervical cancer screening particularly for female health care worker who provide reproductive health care is considered important. Two studies were conducted in the GCC to assess the knowledge, attitude, and practice of primary care physicians of cervical cancer screening. The studies found that physicians have poor knowledge and practice regarding cervical cancer screening and accordingly a training program is recommended to improve the physician's knowledge and practice [17, 18].

Another study confirmed the result of previous studies conducted in Zimbabwe that revealed that physicians and nurses had poor knowledge regarding the predisposing

factors of cervical cancer, as well as negative beliefs about the risk of developing cervical cancer and poor screening behaviors [19]. Comparatively, one study conducted in Ibadan found that the knowledge about cervical cancer was higher among physicians and inadequate among nurses [20]. On the other hand, one study conducted in Tanzania to assess the knowledge and practice of cervical cancer screening among nurses found that nurses had adequate knowledge regarding cervical cancer causes, and ways of transmission but poor knowledge regarding the risk factors, and symptoms of cervical cancer [15].

Despite knowledge of the gravity of cervical cancer and prevention among female medical workers by screening using a Pap smear; the attitudes and practices towards screening were negative [21]. A Study in the UK showed that some medical workers, including female physicians considered themselves, not to be at risk of developing cervical cancer. Moreover, they expressed feelings of embarrassment and/or pain. The receipt of an abnormal result and referral for colposcopy causes high levels of distress [22].

Among barriers for effective cervical cancer screening, lack of knowledge among medical workers [15, 17, 18] inadequate training of staff [16], not feeling at risk, lack of symptoms, carelessness, fear of vaginal examinations, lack of interest and test being unpleasant [12,13] is observed. It is unlikely that those medical workers would feel motivated to screen others or advise them accordingly. Furthermore, anxiety regarding physical privacy [23] and being busy [12] were considered as barriers.

The female health care workers who deliver reproductive health care are one of the most important health knowledge providers and promoters [11]. Therefore, if female physicians and nurses have unsatisfactory knowledge, inappropriate attitudes and practice toward cervical cancer screening, they would not distribute the knowledge to the community and cannot persuade the patient to perform a Pap smear [12]. Accordingly, improving the knowledge and attitudes about cervical cancer screening in such experts will encourage them to readily provide accurate information and motivate the general population to join screening programs and motivate themselves to be screened for cervical cancer.

In Qatar there is one study conducted to assess knowledge, attitude and practice of women attending the primary healthcare centers. The study showed that knowledge and practice were inadequate among those under 30 years old [24], but no previous study has assessed the knowledge, attitude and practices of cervical cancer screening among female health care workers in the primary health care setting.

Therefore, this study was conducted to assess knowledge, attitude and practice of female health care workers regarding cervical cancer screening. The aim of this study is to raise the awareness and importance of cervical cancer screening among female HCWs and use the results of

study to be a guideline for improvement of knowledge, practice and attitudes of primary healthcare providers to a level high enough to provide accurate information and good attitudes for cervical cancer screening to the people and patients. Also, early detection of cervical cancer provides better outcomes.

Materials and Methods

Study design : Descriptive cross sectional study to assess knowledge, attitude and practices of cervical cancer screening among female health care workers in primary health care centers in Qatar.

Study area: This study was conducted at Primary Health Care Corporation in Qatar, where cervical cancer screening takes place in primary health care centers by specialists or consultants in family medicine through well women clinics. These clinics are scheduled to be one to two clinics in each health center arranged in the morning or evening duty according to each health center's situation; the capacity of each clinic reaches an average of 25 patients per clinic time.

Study subjects: It included all female health workers who fulfilled the inclusion criteria: Female health care workers working in health centers (in the central region) inside Doha city, including female physicians (consultants, specialists, residents) and staff nurses. Exclusion criteria included : Female health care workers working in healthcare centers outside the central region and Male staff in and out of Doha healthcare centers.

Sample size and Sampling Technique: The sample size was calculated according to expected prevalence of good knowledge in a previous study done in Saudi Arabia 2013 of 21.8% [25]. Assuming a margin of error of 5%, and 95% confidence level, the calculated sample size was 90; according to Daniel equation [26] it includes all who fulfilled the inclusion criteria. Selection was based on systematic random sampling technique of every 2nd patient until reaching the required number.

Data collection: All the participants were informed about the purpose of the study and informed oral and written consent was obtained. They were assured confidentiality of their personal identifiable information. The interviews were carried out between March 2016 and June 2016.

Participants answered a self-administered questionnaire containing both coded and open-ended questions. The first 6 questions gather demographic information about the participants, the next 6 questions assess the participants' awareness and knowledge. In this study, awareness is defined as having previously heard about cancer cervix screening. Moreover, 3 questions were asked to assess participants' attitudes; and 2 questions for the practices regarding cervical cancer screening, one question to understand the factors influencing female HCWs participation in the screening program, and 2 questions

related to the location preference to do the test and by whom.

We considered adequate knowledge if participants mentioned at least 3 of the known risk factors (early sexual intercourse, multiple sexual partners, multi parity, low social economic status, Human Papilloma Virus infection). The participants knew that cervical cancer ranks as the 5th most common cancer among woman in Qatar. The participants knew that the human papillomavirus is the etiological agent for cervical cancer, cervical cancer is a curable disease and the participants should correctly answer the screening eligibility and interval of the cervical cancer screening that should be performed.

Adequate Practice was assessed when the participants answered that they referred their patients to do Pap smear test and that they themselves are examined if applicable. Attitude toward screening was measured by answering yes to all of the following questions: Do you think you

are at risk of getting cervical cancer? Do you think that you should undergo screening for cervical cancer? Do you think all eligible women for cervical cancer screening should undergo it? The questionnaire contents validity was confirmed through an extensive literature review and experts specialized in gynecology.

Ethical considerations : Participation in the study was completely voluntary; the investigators explained the purpose of the research and every participant was able to withdraw at any time; confidentiality was maintained. Approval by Institutional Review Board from Research Section - Primary Health Care Corporation in Qatar was obtained before conducting the study PHCC/RC/14/07/2014 .

Data Analysis : Data collected was entered and analyzed by using Epi Info software and statistical significant tests suitable for different variables was used.

Results

Sociodemographic

A total of 90 female health care workers were interviewed, 43.3 % were in age group 30-39 years, 91.1% were non Qatari, 81.1% were nurses, 83.3% were married, 97.8 % were nonsmokers, and 86.5 % had no chronic medical condition. The sociodemographic details of the respondents are shown in Table 1.

Table 1 : Socio-demographic Characteristics of Participants

Characteristic	No.	%
Age Groups (Years)		
20 – 29	20	22.2
30 – 39	39	43.3
>= 40	31	34.5
Nationality		
Qatari	8	8.9
Non-Qatari	82	91.1
Job title		
Consultant	15	16.7
Resident	2	2.2
Nurse	73	81.1
Marital status		
Ever Married	75	83.3
Single	15	16.7
Smoking status		
Yes	2	2.2
No	88	97.8
Previous medical illness		
Yes	12	13.5
No	77	86.5

Abbreviations: Obs. & Gyne.: Obstetrics and Gynecology, MD: Medical Doctorate,

Knowledge of Cervical Cancer and Risk Factors

Most of the female HCPs were aware of cervical cancer screening (97.8%). Knowledge on risk factors, screening eligibility and interval is shown in Table 2. The results revealed that 62.2% had fair knowledge about ranking cervical cancer in Qatar, 92.2% had good knowledge regarding (etiological factors, multiple partners, HPV, and family history), 9 % knew the eligibility and screening interval for cervical cancer screening and 73.3% stated curability of cervical cancer.

Table 2 : Knowledge and beliefs of the women about cervical cancer risk and prevention		
Knowledge/Belief item	No.	%
Do you know that cervical cancer ranks as the 5th most frequent cancer among women in Qatar?		
Yes	56	62.2
No	34	37.8
Do you know that human papillomavirus is etiological agent for cancer cervix?		
Yes	81	90.0
No	9	10.0
Which of these factors can increase the risk of getting cervical cancer?		
Adequate Knowledge	83	92.2
Not Adequate knowledge	7	7.8
Do you know that cancer cervix is curable?		
Yes	66	73.3
No	24	26.7
Have you heard about cancer cervix screening (Pap smear)?		
Yes	88	97.8
No	2	2.2
Answer to eligibility criteria and interval?		
Correct answer	8	8.9
Wrong answer	82	91.1
Abbreviations: PAP: Papanicolaou		

Attitude and Practice Towards Cervical Cancer Screening

Table 3 shows the attitude and practice towards cervical cancer screening. 42.2% of the female HCWs perceived themselves as at risk of developing cervical cancer, 84.4% believed that they must be screened, 96.7 % were referred for cancer screening, and 42.2% had a pap smear before.

Table 4 shows the factor influencing participation in the cervical cancer screening program, where participants prefer to do the screening and by whom. The most influential factor affecting participation in cervical cancer screening was embarrassment (17.3%) inadequate training (14.8%), does not want to be exposed to colleagues (13.6%) and not feeling at risk (12.3%). Figure (1). Among them 32.2 % of the participants prefer to do pap smear in primary care clinics (Figure 2) while 94.5% preferred to have a pap smear by female physicians (Figure 3).

Table 3 : Attitude and practice of women toward cervical cancer screening

Characteristic	No.	%
Do you think you are at risk of getting cervical cancer?		
Yes	38	42.2
No	52	57.8
Do you think that you should undergo screening for cervical cancer?		
Yes	76	84.4
No	14	15.6
Do you think all eligible women for cervical cancer screening should undergo for it?		
Yes	87	96.7
No	3	3.3
Do you screen or refer patient for Pap smear?		
Yes	85	94.4
No	5	5.6
Have you ever had Pap smear yourself? If applicable.		
Yes	38	42.2
No	52	57.8

Table 4 : Factors influencing to participation in the cervical cancer screening program, where participants prefer to do the screening and by whom

What is the factor influence you to participate in the cervical cancer screening program?	No.	%
Lack of knowledge about cervical cancer screening	8	9.9
Inadequate training.	12	14.8
Not feeling at risk	10	12.3
Lack of symptoms	8	9.9
Lack of interest	5	6.2
Afraid of experiencing pain	4	4.9
Embarrassed	14	17.3
Does not want to be exposed by colleagues.	11	13.6
Afraid of the outcome of the screening test	9	11.1
Where would you prefer to have Pap smear test?		
Well women clinic in the primary health care centers	29	32.2
Gynecological clinic in hospital	25	27.8
Private clinic	19	21.1
No preference (It does not matter)	17	18.9
By whom you prefer to conduct your Pap smear test?		
Female physicians	85	94.5
Male physicians	0	0.0
Nurse practitioner	2	2.2
It does not matter	3	3.3

Figure 1

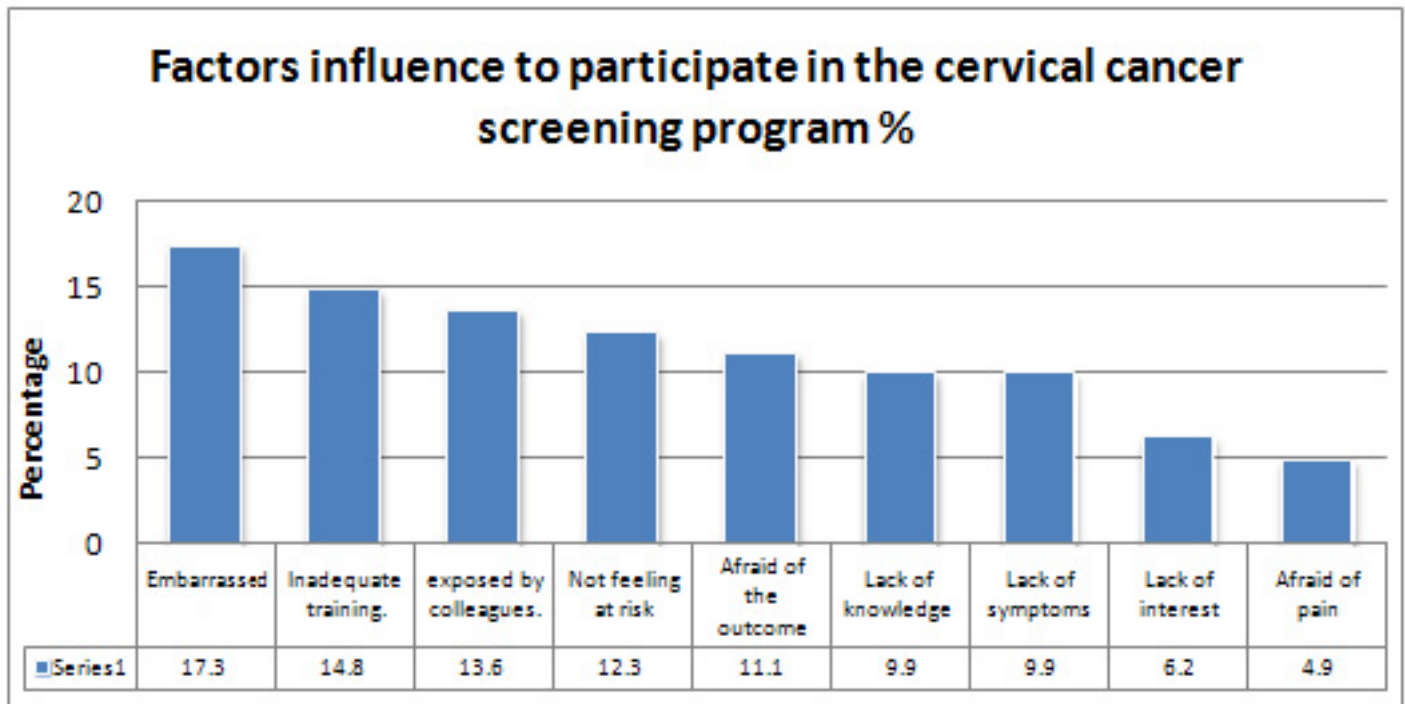


Figure 2

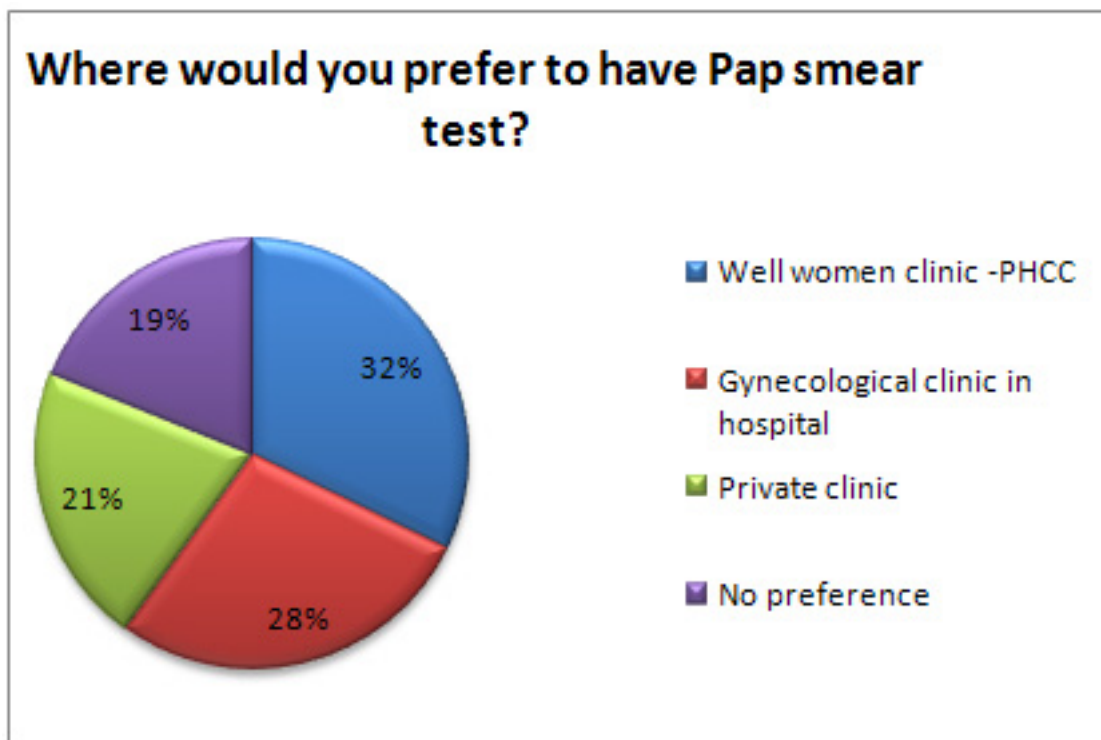


Figure 3

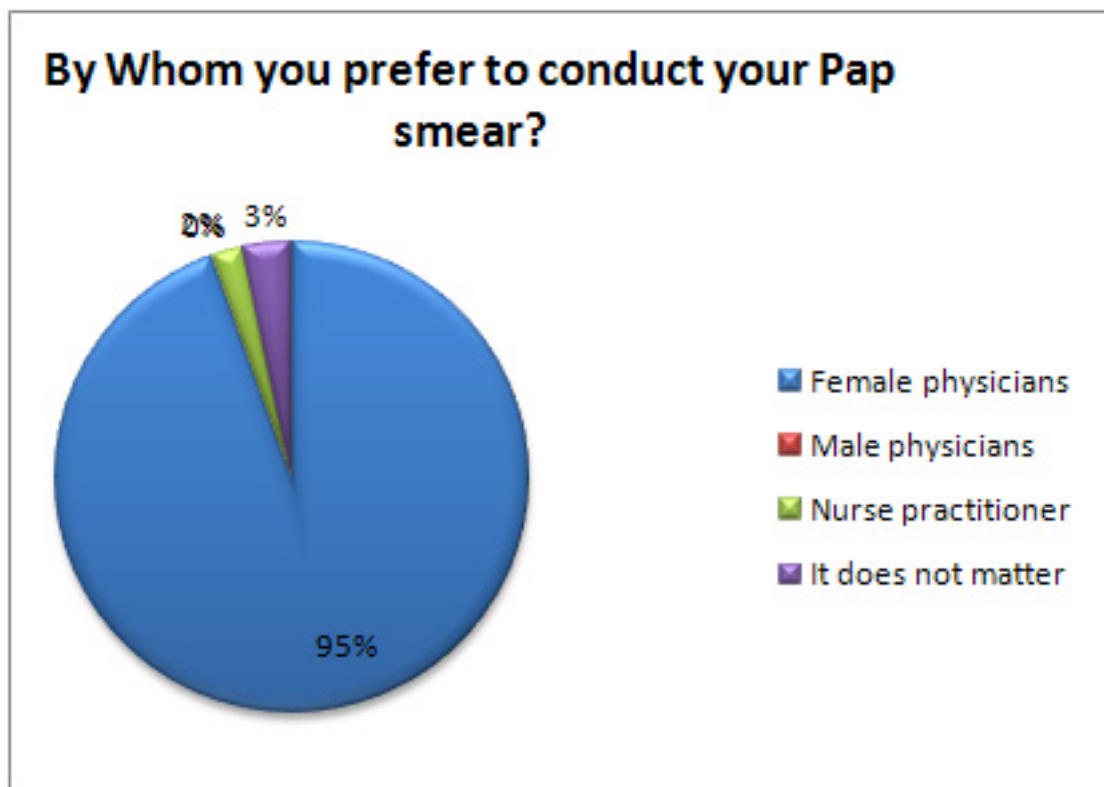


Table 5 shows the relation between knowledge score and sociodemographic factors revealing that no significant test results were found.

Table 5 : knowledge scores of the women according to Socio-demographic characteristics

Characteristic	Mean (SD)	P-Value
Age Groups (Years)		
20 – 29	7.9 (2.0)	0.887
30 – 39	7.7 (1.8)	
>= 40	7.6 (1.7)	
Nationality		
Qatari	7.6 (2.1)	0.860
Non-Qatari	7.7 (1.8)	
Job title		
Physician	8.1 (2.1)	0.134
Resident	10.0 (0.0)	
Nurse	7.6 (1.7)	
Marital status		
Ever Married	7.8 (1.8)	0.642
Single	7.5 (1.8)	
Smoking status		
Yes	6.5 (0.7)	0.333
No	7.8 (1.8)	
Previous medical illness		
Yes	8.3 (1.4)	0.266
No	7.6 (1.9)	

Abbreviations: Obs. & Gyne.: Obstetrics and Gynecology, MD: Medical Doctorate, SD: Standard Deviation. Note: (*): P-value < 0.05

Table 6 shows the relation between individual knowledge items and participants' job revealing that there is significant test results related to (Smoking, and Family History) mainly among the residents which reaches 100% compared to physician and nurses, while eligibility criteria and screening interval was significant among physicians 27% compared to 5% among nurses.

Table 6 : Relation between individual knowledge items and participants job					
Question	Physicians (n=15)	Residents (n=2)	Nurses (n=73)	Total (90)	P- value
Do you know that cervical cancer ranks as the 5th most frequent cancer among women in Qatar?	11 (73)	2 (100)	43 (59)	56 (62)	0.404
Do you know that human papillomavirus is etiological agent for cancer cervix?	14 (93)	2 (100)	65 (89)	81 (90)	1.00
Marriage before age of 18 years can increase the risk of getting cervical cancer?	11 (73)	2 (100)	43 (59)	56 (62)	0.404
Having multi-sexual partners can increase the risk of getting cervical cancer?	14 (93)	2 (100)	65 (89)	81 (90)	1.00
HPV infection can increase the risk of getting cervical cancer?	14 (93)	2 (100)	70 (96)	86 (96)	0.574
Smoking can increase the risk of getting cervical cancer?	14 (93)	2 (100)	40 (55)	56 (62)	0.006*
Family History of cervical cancer can increase the risk of getting cervical cancer?	11 (73)	2 (100)	70 (96)	83 (92)	0.026*
Low socioeconomic status can increase the risk of getting cervical cancer?	8 (53)	2 (100)	33 (45)	43 (48)	0.319
Do you know that cancer cervix is curable?	10 (67)	2 (100)	54 (74)	66 (73)	0.754
Have you heard about cancer cervix screening (Pap smear)?	14 (93)	2 (100)	72 (99)	88 (98)	0.344
Answer to eligibility criteria and interval?	4 (27)	0 (0)	4 (5)	8 (9)	0.044*

Table 7 shows the participants' attitudes towards cervical cancer screening and job description revealing no significant test results found.

Table 7 : Participant attitudes towards cervical cancer screening and job description					
Question	Physicians (n=15)	Residents (n=2)	Nurses (n=73)	Total (90)	P- value
Do you think you are at risk of getting cervical cancer?	7 (47)	2 (100)	29 (40)	38 (42)	0.261
Do you think that you should undergo screening for cervical cancer?	15 (100)	2 (100)	59 (81)	76 (84)	0.164

Discussion

Cancer of the cervix is the most common cancer among women and it can be prevented by applying the appropriate screening test, knowing the eligibility and screening interval. This study has tried to capture the awareness level, knowledge and practice toward cervical cancer screening among female HCWs.

In this study a total of 90 female health care workers participated. The results revealed that most of the female HCPs were aware of cervical cancer screening (97.8%). Among them 43.3 % were in the age group 30-39 years, 91.1% were non Qatari, 81.1% were nurses.

This study found that female health care workers had fair to good knowledge about cervical cancer screening. It ranged from 62.2% to 97.8% in different parameters assessed. It is matched with the study done in Saudi Arabia revealing that the knowledge about cervical cancer screening ranged between 60.5% to 90% [25]. This matching could be explained by that both studies were done among female health care workers in spite that the Saudi Arabia study included only physicians.

An important finding is that of most of the participants, mainly the nurses (91.1%) were not aware of the eligibility criteria and recommended screening interval for cervical cancer screening. Comparatively a larger percentage of Thai nurses correctly identified the recommended interval and the eligibility criteria for cervical cancer screening found by Nganwai et al [27]. This could be attributed to the training they have attended.

With regard to attitudes toward cervical cancer screening, 84.4% think that they must be screened, revealing positive attitudes towards screening, which matched with the study done in Qatar revealing 85.5% showed a positive attitude towards screening for cervical cancer [24], however that study was done among females from the general population, not health care workers. This explains increased awareness about cervical cancer screening among females in Qatar.

In regard to practices towards cervical cancer screening, 42.2% had pap smear before, which matched with the same study done in Qatar revealing 40% did have a Pap smear once before [24]. This also matched as female health care workers are part of the same female population so equal percentages were expected. In Saudi Arabia one study showed that [25] one third only did Pap smears in the physician group while 19 % among nurses. This difference from Qatar could be explained by that Saudi Arabia is still more conservative regarding discussion of cervical cancer screening and considered these issues as confidential matters, especially sexually transmitted diseases.

Among the eligible participants only 42.2% had a pap smear before. Our finding showed that the most common factor influencing participation in the cervical cancer screening program are embarrassment (17.3%), inadequate training (14.8%), they don't want to be exposed by colleagues

(13.6%), and not feeling at risk (12.3%). Comparatively a study conducted in the UK showed similar findings that some medical workers, including female physicians considered themselves, not to be at risk of developing cervical cancer. Additionally, they expressed feelings of embarrassment and/or pain[23]. It is unlikely that these staff will ever motivate others or advise them until their own doubts are cleared.

Whatever the factor influencing participation in the cervical cancer screening program, the present study showed that 94.5% of participants preferred to have the Pap smear test conducted by female physicians either in the Well women clinic in the primary health care centers (32.2%) or Gynecological clinic in hospital (27.8%).

Furthermore, this study found a relation between individual knowledge items and participants' job revealing that there is significant test results related to (Smoking, and Family History) mainly in the residents which reaches 100% compared to physicians and nurses, while eligibility criteria was significant among physicians 27% compared to 5% among nurses. Those findings make us think more of nurse education and training on the topic of cervical cancer screening.

Studies have shown it is possible to train nurses or other health care workers to screen for cervical cancer, and they play an important role in successful screening against cancer of the cervix [17,18]. There is an urgent need to integrate cervical cancer prevention topics in both physicians' and the nurses' training curriculum. The attitudes and beliefs that they are not at risk or they don't want to be exposed and feel embarrassed to do the screening needs to change.

Conclusions

This study concludes that there are inadequate levels of knowledge regarding the eligibility and screening interval of cervical cancer, particularly among nurses. Female HCWs had a good attitude towards cervical cancer screening but uptake of screening for cervical cancer is minimal. All of these will affect their decision for cervical cancer early screening and referral.

Recommendations

The findings of this study are descriptive. Qualitative studies should be done, to explain the understanding level of HCWs about cervical cancer screening importance and knowing the actual reasons for very low uptake of cancer screening, despite having direct access to screening facilities and clinical guidelines for cervical cancer screening in our corporation.

The finding also shows that the female health care workers, mainly nurses, have to be given a high focus. Our corporation needs to have more effectively educated and informed female HCWs about cervical cancer and screening. Moreover, it needs to initiate a monitoring

system e.g. audit to make sure that all female HCWs should be motivated to apply the best practice regarding cervical cancer screening to themselves and patients. Also, the perceived barriers towards screening need to be addressed.

Limitations

The strength of the present study is that it is the first to assess knowledge, attitude and practice regarding cervical cancer screening among female healthcare worker where incidence of cervical cancer is high[3]. On the other hand, the study has some limitations. Firstly, this study is based on a self-reported measure that especially may affect reporting. The method used for estimating the practice of Pap smears were self-reported history, which may not give the actual picture due to inaccurate recall bias. Secondly, it is a descriptive cross sectional study which may not establish temporal relationships between exposure and outcome measures. Thirdly, the role of human papilloma virus vaccine was not addressed well.

Acknowledgement

The data referred in the current report have been gathered with budget support from the research section in primary health care corporation (PHCC) in Qatar. Authors acknowledge participation in data collection of the following residents affiliated to Hamad medical Corporation in Qatar (Dr: Reem Kamal, Dr: Noura Alnachawi, Dr:Ehab Fadel, Dr:Mustaafa Mahmoud, Dr:Nahed Ragab, Dr:Ahmed Fayez, and Dr:Sara Hamad).

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Prevalence and Risk Factors of Impaired Fasting Glucose in Egyptian Adults, Menoufia Governorate

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Abstract

Objective: The aim of this study was to assess the prevalence and risk factors associated with impaired fasting glucose (IFG) in adult individuals.

Background: Prediabetes is defined as blood glucose concentrations that are higher than normal but not of a magnitude which would correspond to a diagnosis of type 2 diabetes. Individuals with prediabetes have an increased high risk of developing type 2 diabetes and associated complications[1], and most type 2 diabetes patients have likely been in a state of hyperglycemia for several years prior to diagnosis [2].

Subject and method: Berket Elsabae district was randomly selected out of eight districts of Menoufia Governorate, of which two family health units were randomly selected. A randomized sample was selected from the attendants of these family health units for regular visits. 1,255 subjects were randomly selected for inclusion in the study.

Results: The prevalence of IFG was 7.9 % (n= 99), of these 52.5 % (n=52) were males and 47.5% (n=73) were females, (OR =0.721, CI =0.477-1.089, p=0.12). The main risk factors associated with IFG

were age (>45 years: P value = 0.003), being married (OR = 1.73, CI = 0.928 - 3.22, P value =0.001), and rural resident (OR =0.71, CI =0.446-1.132, P value = 0.149). History of hypertension, hyperlipidemia and chronic viral hepatitis were significantly associated with higher percentage of isolated impaired fasting blood glucose. Body mass index and blood pressure values were positively correlated to levels of fasting blood glucose group of the studied groups.

Conclusion: Prediabetes with isolated impaired fasting blood glucose level was significantly related to patient education, history of hyperlipidemia, blood pressure and body mass index in the logistic regression model.

Key Words: Prevalence, Risk Factors, Impaired Fasting Glucose.

Introduction

Diabetes mellitus poses serious health concerns and economic burdens as incidence and prevalence rates continue to rise at alarming rates in the Arab and the entire World. Estimates indicate that 29.1 million people, or 9.3% of the US population, have diabetes mellitus, although the disease is undiagnosed in 8.1 million of those individuals. [3]. The prevalence of type II diabetes has increased dramatically in the Arabic-speaking countries over the last three decades; an estimated 9.1% of the populations from the Middle Eastern/North African region have type II diabetes (35.4 million of adults aged 20-79) in 2015, and 30 million with impaired glucose tolerance [4]. Egypt is in the world's top 10 in terms of the highest number of people with diabetes in 2015 (7.8 million) [4]. In 2003, the American Diabetes Association (ADA) [5] reported an intermediate metabolic stage in which blood glucose levels are higher than normal range but do not reach the diagnostic criteria for T2D, leading to the birth of the concepts of impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) both known as pre-diabetes. The importance of this category of the disease, is that the patients are unaware of their pre-diabetes stage; during that time 20-30% of those patients develop complications of diabetes such as nephropathy, cardiomyopathy, retinopathy and neuropathy [6].

Some studies identified the same risk factors, that have been reported in studies of type 2 diabetes patients, to subjects with prediabetes [7 & 8]. Lifestyle-related risk factors and other factors, implicated in the progression of the prediabetic stage to type 2 diabetes, might also contribute to the appearance of prediabetes [8 ,9].

Materials and Methods

This was a case control study nested in a cross-sectional, descriptive, randomized, trial which enrolled a total of 1,255 subjects aged > 20 years of both genders. Berket Elsabae district was randomly selected out of eight districts of Menoufia governorate, of which two family health units were randomly selected. The randomized sample was selected from the attendants of these family health units for regular visits (as randomization was done through selection of each third attendant at the beginning of the working day, three days in each family health unit), for 6 months beginning from the first of July 2015 to the end of December 2015. The study was approved by the Ethical Committee of the Faculty of Medicine, Menoufia University. Informed consent was signed by all participants after simple and clear explanation of the research objectives and procedures.

The study sample size was calculated based on the lowest prevalence of IFG from the previous literature which was 2% [10] and the highest prevalence which was 35.8% by Chen et al., 2013 [11]; sample size was calculated using the Epi Info program (Atlanta, Georgia, USA) with 95% confidence interval (CI), depending on the total number

of adult population in the selected rural area. They were physically examined by a trained team. Known diabetic patients were excluded.

The selected individuals were interviewed using questionnaire with the guide of the researcher. The questions were explained using easy language for the participants to understand, regarding their level of education and culture. The researcher was sure that patients understood each question. The items were read out verbally to the patients and the questionnaires were filled in with the patients' own words by the researcher.

The questionnaire covered history items : including age, sex, socioeconomic standard, which was assessed through their education, occupation, income, number of individuals per room, type of housing, material possessions, etc), They were graded into high, middle and low socioeconomic status [12]. Exercise (frequency of exercise was defined as performing an activity such as walking for ≥ 30 minutes every day, either < 1 day/week, 1-4 days/week or ≥ 5 days/week, and classified as exercising every day and not every day. Smoking, history of diseases such as hypertension , hyper-lipidemia, heart disease and viral hepatitis, family history of diabetes and history of medication intake such as antihypertensive drugs, corticosteroids or oral contraceptive medication was recorded.

- **Validation of the questionnaire** was done through its submission to a panel of 4 experts to test its validity. The experts were professors of internal medicine, family medicine and two endocrinologists. The items were revised by the experts to determine whether the items were relevant for assessment.
- The experts were asked to evaluate individual items in relation to their relevance and appropriateness and rate items on a 4 point scale : score 4 for Adequate (simple, relevant and clear item), 3 for adequate, but needs minor modification, 2 for items that need major modification, 1 for not so adequate (can be omitted). Content validity index (CVI): percentage of total item was rated by experts as either 3 or 4.

The score of $\geq 80\%$ is generally considered to have a good validity. CVI of the designed questionnaires was calculated. It was 85%.

Physical examination

Height in centimeters was measured bare footed with the patients standing straight. Weight in kilograms was recorded using portable weighing scale with patient bare footed standing straight with heels together while wearing light clothes. Body mass index (BMI) was calculated for each patient as formula: weight (kg) / [height (m)]². BMI was graded to

1. Normal body weight if BMI ranging from 18.5 to less than 25
2. Overweight if they had BMI of (25 to 29.9)
3. Obese if BMI was equal to or more than 30.

Blood pressure (BP) was measured using a suitable mercury sphygmomanometer after a 10 minutes rest with the patient in the sitting position and cubital fossa at heart level. BP was measured twice at 5 minute intervals. Hypertension was defined as a systolic blood pressure ≥ 140 mmHg and/or a diastolic blood pressure ≥ 90 mmHg (JNC 7, 2008)[13]. The participants currently using antihypertensive medications were also classified as positive for hypertension even if they had normal blood pressure. Hypertension was identified according to the following criteria;

- Normotensive: < 120 mmHg (Systolic), and < 80 mmHg (Diastolic)
- Pre-hypertensive: ≥ 120 - < 140 mmHg (Systolic), and/or ≥ 80 - < 90 mmHg (Diastolic)
- hypertension: : > 140/90mmHg .

Laboratory analysis

Subjects were asked to fast 6 to 8 hours overnight (no caloric intake). The fasting venous blood sample was taken by the laboratory technician and fasting blood sugar level measured by RA 50 analyzer, wavelength 505, using spin-react reagent.

Two hour postprandial glucose level values were assessed after two hours of receiving an ordinary breakfast. Fasting blood glucose level values according to ADA, 2014 [14] were as follows:

- <100 mg/dl (non-diabetes)
- 100-<126 mg/dl (pre-diabetes IFG)
- ≥ 126 mg/dl (diabetes)

Two hour postprandial glucose level values for the non diabetics, pre-diabetics and diabetics were taken according to ADA, 2014[14] as follows:

- <140 mg/dl [(Non-diabetes)
- 140 - < 200 mg/dl (Pre- diabetics IGT)
- ≥ 200 mg/dl (Diabetics)

Diabetic cases (53 cases, with either diabetic FBG and 2hPP or one of them after repeating the test) were excluded and directed towards their proper management, after breaking the bad news regarding their diabetic state to them as they were unaware of that. The normoglycemic individuals (1012) constituted the control group for the isolated impaired fasting BG group (99 cases).

Statistical Analysis

Data were analyzed with the Statistical Package for the Social Sciences (SPSS) v.21 for Windows (IBM Inc. Chicago, IL), and the results were considered statistically significant when $p < 0.05$. For quantitative data analysis, simple frequencies were used for data checking.

Quantitative data was expressed as mean and standard deviation ($X \pm SD$) and analyzed by Student t- test for comparison of the two groups of normally distributed variables.

Qualitative data was expressed as number and percentage and analyzed by Chi-square test. t- test : is a test of significance for comparison between two quantitative variables with different variance. A logistic regression model was constructed in order to estimate odds ratios (Confidence Interval 95%) for the presence of IFG, adjusted by age groups, educational status, JNC-8 classification of hypertension, history of diseases as hypertension, hyperlipidemia and chronic viral hepatitis.

Results

The total study sample was 1,255 subjects, 46.3% males and 53.7 % females. The mean age was 38.9 ± 11.16 , 68.9% of the studied group were rural residents and 31.1 were urban residents (Table 1). Normoglycemic individuals constituted 80.6 % of the studied group (normal fasting and 2 hours post prandial), while the prevalence of isolated impaired fasting blood glucose was 7.9 % and undiagnosed diabetes in patients who were unaware of their glycemic status, constituted 4.2% of the studied group (2.8 % had both diabetic fasting and 2hpp, 0.6% had only diabetic 2hpp BG , 0.3% had only diabetic fasting BG and 0.5 % had diabetic 2hpp and impaired fasting BG). [Table 2] & Figure [1].

Age constituted statistical significant difference and risk factor between normal and IFG groups, with the highest prevalence among >45 years ($p < 0.001$). Education of participants constituted statistically significant difference between the studied groups. Higher education grades seem to be protective as the highest percentage of normal group had university graduation (40.7%) versus 9.1% for the IFG group ($p < 0.001$) in the normal fasting BG group. Sex, occupation, marital Status and residence didn't constitute statistical significant difference between the studied groups [Table 3].

History of hypertension, hyper-lipidemia and viral hepatitis were significantly higher among the IFBG group than the normal fasting blood glucose group (p value =0.003,OR= 2.305 , CI (1.323- 4.015) for hypertension, p value <0.001,OR= 1.079 , CI (2.67 - 8.51) for hyper-lipidemia and p value =0.004 , OR= 2.803 , CI (1.354 - 5.804) for chronic viral hepatitis), while history of heart and renal diseases didn't constitute significant difference among the studied groups. Regarding history of medications, consumption of anti-hypertensives and corticosteroids were significantly higher among the IFBG group than the normal fasting blood glucose group. Smoking constituted no statistical difference between the IFBG group and normal fasting blood glucose group (p value = 0.176 , OR= 0.731 and CI (0.462-1.153). Presence of relatives with diabetes in first and second grade constituted no statistical significant difference between IFBG and normal group [Table 4].

Table 1 : Demographic data of the studied group

Demographic character	No Total = 1255 cases	%
Sex		
Male	581	46.3
Female	674	53.7
Age		
Mean ± SD	38.9±11.16	
Patient education		
-Illiterate	4	0.3
-Basic education	151	12.1
-Secondary school	167	13.3
- Intermediate institute	463	36.9
-University graduation	470	37.4
Patient Occupation		
-No work or house wife	282	22.5
-Unskilled worker	50	4
-Skilled worker/farmer	98	7.8
-Trades /Free business	677	53.9
- Employment / retired	34	2.7
-Professional	114	9.1
Marital status		
-Not married	225	17.9
-Married	1030	82.1
Residence		
-Rural	865	68.9
-Urban	390	31.1
Socioeconomic		
-High	467	37.2
-Middle	486	38.7
-Low	302	24.1

Obese participants (BMI > 30) were significantly higher in the IFBG group than the normal group (69.4 % in IFBG group versus 45 % in normal group); IFBG while overweight were more among the normal FBG group. Comparing the mean of BMI among groups was significantly higher in IFBG ($p = 0.001$) [Table 5] [Fig,2]. High blood pressure constituted 12.1 % of IFBG group versus 5.7 % in the normal fasting blood glucose group which constituted a statistical significant difference between them (p value = 0.002) [Table 5]. Comparing means of blood pressure parameters (systolic, diastolic and mean arterial pressure) they were significantly higher in the IFBG group (P value = 0.007, 0.002 and 0.001 respectively)[Table 5] & [Fig 3]

Pearson correlation showed statistical significant positive correlation of the fasting blood glucose values and body mass index, systolic, diastolic and mean blood pressure of the studied group [Table 6] & [Fig 4,5,6].

Logistic Regression Analysis model of risk factors associated with impaired fasting blood glucose showed risk factors (including age, higher patient education, blood pressure, receiving of anti-hypertensive medication, BMI and presence of diseases as hypertension and chronic viral hepatitis) were associated with significantly higher odds of being in impaired fasting glucose group. Risk factors that had the strongest prediction of impaired fasting blood glucose were history of hyper-lipidemia (OR: 4.23, 95% CIs: 1.87-8.53), obese participants (OR: 2.91, 95% CIs: 1.21-2.21) and patient education (OR: 0.722, 95% CIs: 0.681-0.765) [Table 7].

Table 2 : Distribution of the Studied Group According to their Blood Glucose Level

Blood Glucose	No Total =1255	%	
Normal Fasting and Normal 2 HPP Blood Glucose Fasting BG <110md/dL 2hpp BG < 140 mg /dl	1012	80.6	
Isolated Impaired Fasting Blood Glucose : 110- 126 mg/dL	99	7.9	
Isolated Impaired 2hPP Blood Glucose : 140- 200 mg/dL	55	4.4	
Impaired Both fasting and 2 hPP BG 110- 126 mg/dL and 140- 200 mg/dL	36	2.9	
Diabetic cases Fasting > 126 mg /dL (repeated) and 2hPP > 200 mg /dL	35	2.8	Total Diabetic Cases 53 (4.2%)
Diabetic cases Fasting .. normal 2hPP>200 mg/dL	8	0.6	
Diabetic cases Fasting diabetic .. > 126 mg/dl 2hPP.....normal	4	0.3	
Diabetic cases Impaired Fasting 110-126 mg /dL Diabetic 2 hpp > 200mg/dL	6	0.5	

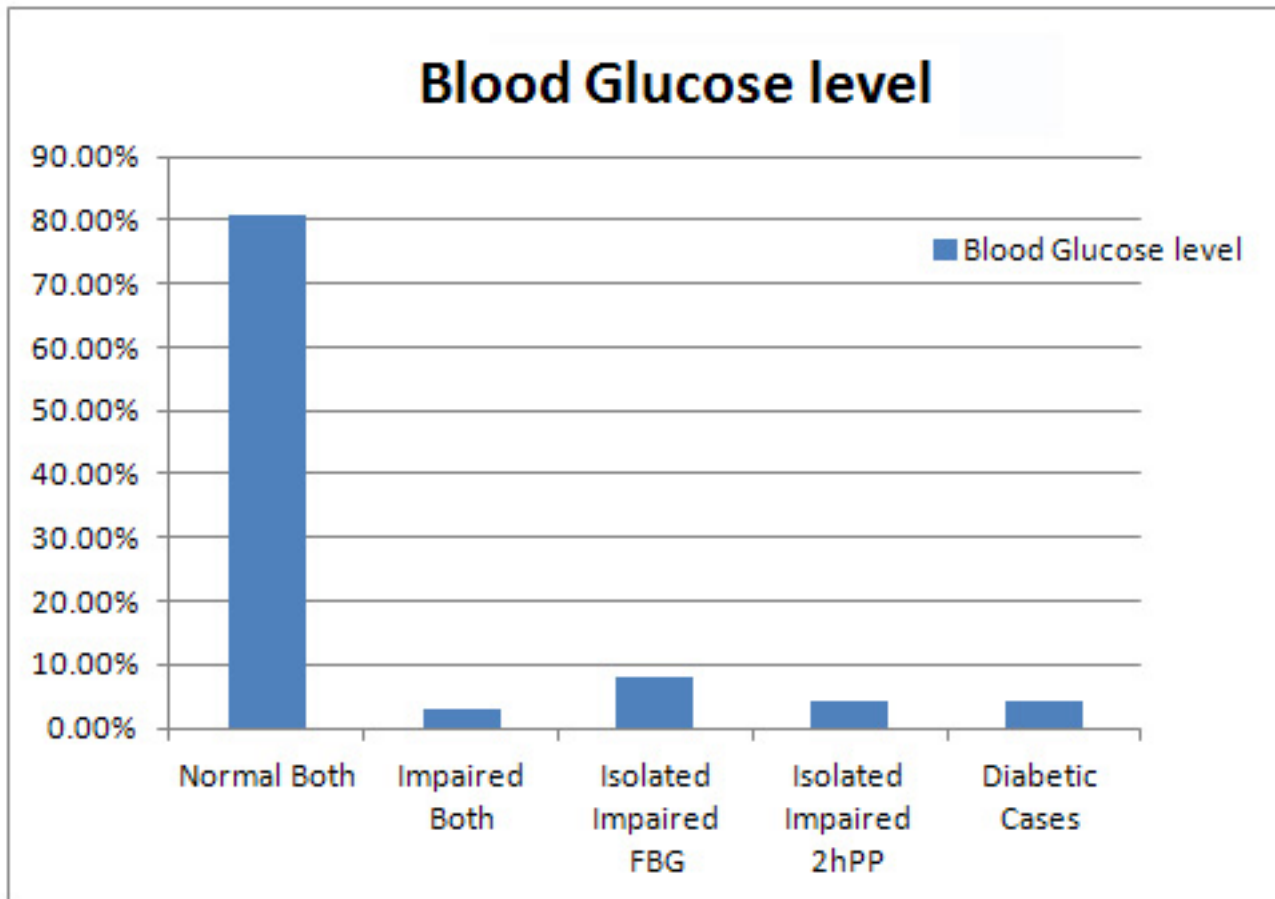
Figure 1: Distribution of Cases according to their Blood Glucose Level

Table 3 : Comparison of Normal and Impaired Fasting Blood Glucose groups as Regards Their Demographic Characters

Demographic character	Normal Fasting BG (N= 1012) No (%)	Impaired Fasting Blood Glucose (N= 99) No (%)	Total (N= 1111) No (%)	X ² P value	Odd's Ratio	CI 95 %
Sex						
-Male	449 (44.4)	52 (52.5)	501 (45.1)	2.42	0.721	(0.477-1.089)
-Female	563 (55.6)	47 (47.5)	610 (45.9)	0.12		
Age of patients Mean ± SD	38.04±11.94	42.49± 12.06	38.93±12.55	-3.537* <0.001	---	-----
Age Group						
< 30 years	314 (31)	18 (18.2)	332 (29.9)	11.27		
30- 40 years	304 (30.1)	26 (26.3)	330 (29.7)		-----	-----
>45 years	394 (38.9)	55 (55.5)	449 (40.4)	0.003		
Education						
-Illiterate	15 (1.5)	17 (17.2)	32 (2.9)			
-Basic	80 (7.9)	45 (45.5)	125 (11.3)	62.44	-----	-----
-Secondary school	352 (34.9)	17 (17.2)	168 (15.2)	< 0.001		
- Intermediate	151 (15)	11 (11.1)	363 (32.8)			
-University	410 (40.7)	9 (9.1)	419 (37.9)			
Occupation						
-No work	228 (22.5)	21 (21.1)	249 (22.4)			
-Unskilled worker	35 (3.5)	5 (5.1)	40 (3.6)		-----	-----
-Skilled worker	84 (8.3)	7 (7.1)	91 (8.2)	4.83		
-Trade /business	540 (53.4)	50 (50.5)	590 (53.1)	0.436		
- Employer	26 (2.6)	6 (6.1)	32 (2.9)			
-Professional	99 (9.8)	10 (10.1)	109 (9.8)			
Marital status						
-Not married	195 (19.3)	12 (12.1)	207 (18.6)	3.039	1.73	0.928 - 3.228
-Married	817 (80.7)	87 (87.9)	904 (81.4)	0.081		
Socioeconomic						
-High	374 (37)	39 (39.4)	413 (37.2)	1.388		
-Middle	407 (40.2)	34 (34.3)	441 (39.7)	0.499	---	-----
-Low	231 (22.8)	26 (26.3)	257 (23.1)			
Residence						
Rural	674 (66.6)	73 (73.7)	747 (67.2)	2.085	0.71	0.446 - 1.132
Urban	338 (33.4)	26 (26.3)	364 (32.8)	0.149		

Table 4 : Comparison of Normal and Impaired Fasting Blood Glucose Groups as Regards their History

History Parameters	Normal Fasting BG	Impaired FBG	Total	X ²	Odd's Ratio	CI 95%
	(N= 1012) No (%)	(N= 99) No (%)	(N= 1111) No (%)	P value		
Hypertension						
Yes	89 (8.8)	18 (18.2)	107 (9.6)	9.131 0.003	2.305	1.323 -4.015
No	923 (91.2)	81 (81.8)	1004 (90.4)			
Hyper-lipidemia						
Yes	48 (4.7)	19 (19.2)	67 (6.0)	33.222 <0.001	4.77	2.67 – 8.51
No	964 (94.9)	80 (80.8)	1044 (94.0)			
Heart Diseases						
Yes	38 (3.8)	4 (4)	42 (3.8)	0.12* 0.784	1.079	0.377 -3.089
No	974 (96.2)	95 (96)	1069 (94)			
Viral Hepatitis						
Yes	39 (3.9)	10 (10.1)	49 (4.4)	8.348 0.004	2.803	1.354 -5.804
No	973 (96.1)	89 (89.9)	1962 (95.1)			
Medications						
No Drugs	808 (79.8)	63 (63.6)	871 (78.6)	25.18 0.001	---	-----
Antihypertensives	59 (5.8)	14 (14.1)	73 (6.6)			
Corticosteroids	48 (4.7)	12 (12.1)	60 (5.4)			
Oral Contraceptives	69 (6.8)	6 (6.1)	75 (6.8)			
Others	28 (2.8)	4 (4.1)	28 (2.6)			
Daily exercising						
-Yes	373 (36.9)	34 (34.3)	407 (36.6)	0.246 0.620	0.896	0.581 – 1.383
-No	639 (63.1)	65 (65.7)	704 (63.4)			
Relative with Diabetes						
Yes in 1 st Grade	252 (24.9)	23 (23.2)	275 (24.8)	3.413* 0.182	---	-----
Yes in 2 nd Grade	31 (3.1)	0 (0)	31 (2.8)			
No	729 (72.0)	76 (67.8)	805 (72.5)			
Smoking						
Yes	235 (23.2)	29 (29.3)	264 (23.8)	1.835 0.176	0.731	0.462 – 1.153
No	777 (76.8)	95 (70.7)	847 (76.2)			

Table 5 : Comparison of Normal and Impaired Fasting Blood Glucose groups as Regards their Body Mass Index and Blood Pressure

Parameters	Normal Fasting BG	Impaired FBG	Total	Test of Significant χ^2	P value	
	(N= 1012) No (%)	(N= 99) No (%)	(N= 1111) No (%)			
BMI						
- Normal	130 (12.9)	8 (8.1)	139 (12.5)	22.227	<0.001	
- Overweight	426 (42.1)	22 (22.2)	448 (40.3)			
- Obese	455 (45)	69 (69.7)	524 (47.2)			
Blood Pressure						
- Normal	894 (88.3)	75 (75.8)	969 (87.2)	12.817	0.002	
- Pre hypertensive	60 (5.9)	12 (12.1)	72 (6.5)			
- Hypertensive	58 (5.7)	12 (12.1)	70 (6.3)			
Body mass index	Mean \pm SD	Mean \pm SD	Mean \pm SD	t test		
	30.02 \pm 4.81	31.72 \pm 4.07	30.17 \pm 4.77	-3.406	0.001	
	Systolic BP	117.28 \pm 12.12	120.9 \pm 18.38	117.6 \pm 12.8	-2.691	0.007
	Diastolic BP	69.01 \pm 9.76	72.32 \pm 11.23	69.31 \pm 9.93	-3.177	0.002
	Mean Arterial Pressure	85.1 \pm 9.63	88.51 \pm 12.82	85.4 \pm 10.00	-3.257	0.001

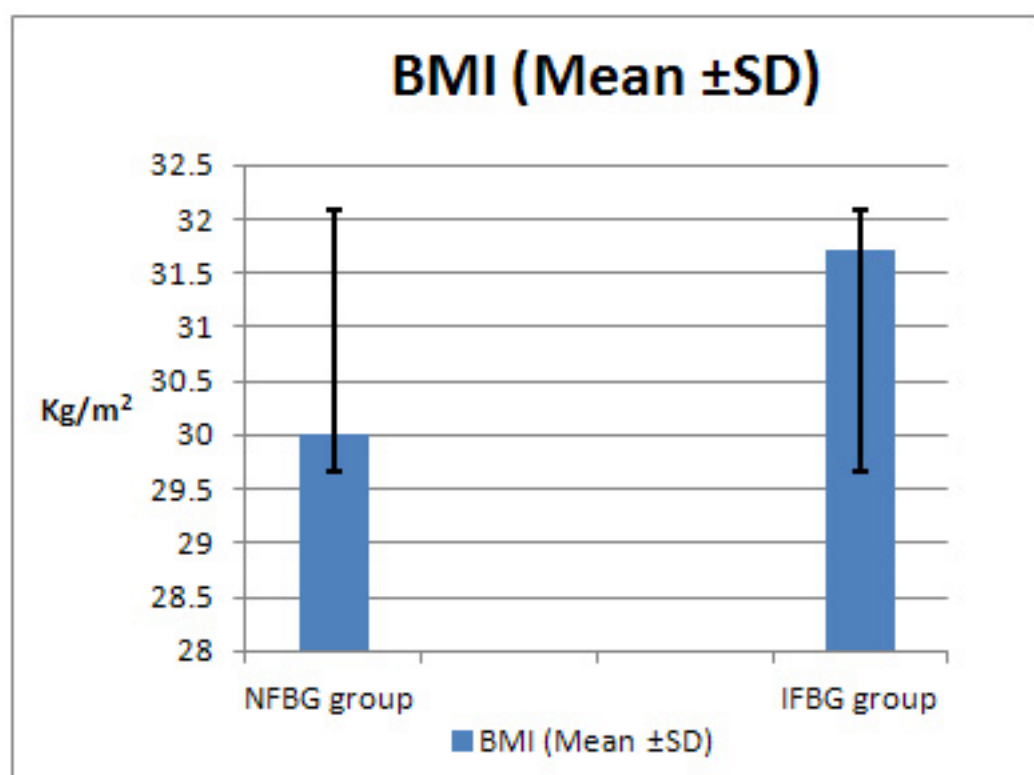
Figure 2: Comparison of BMI (Mean \pm SD) between groups

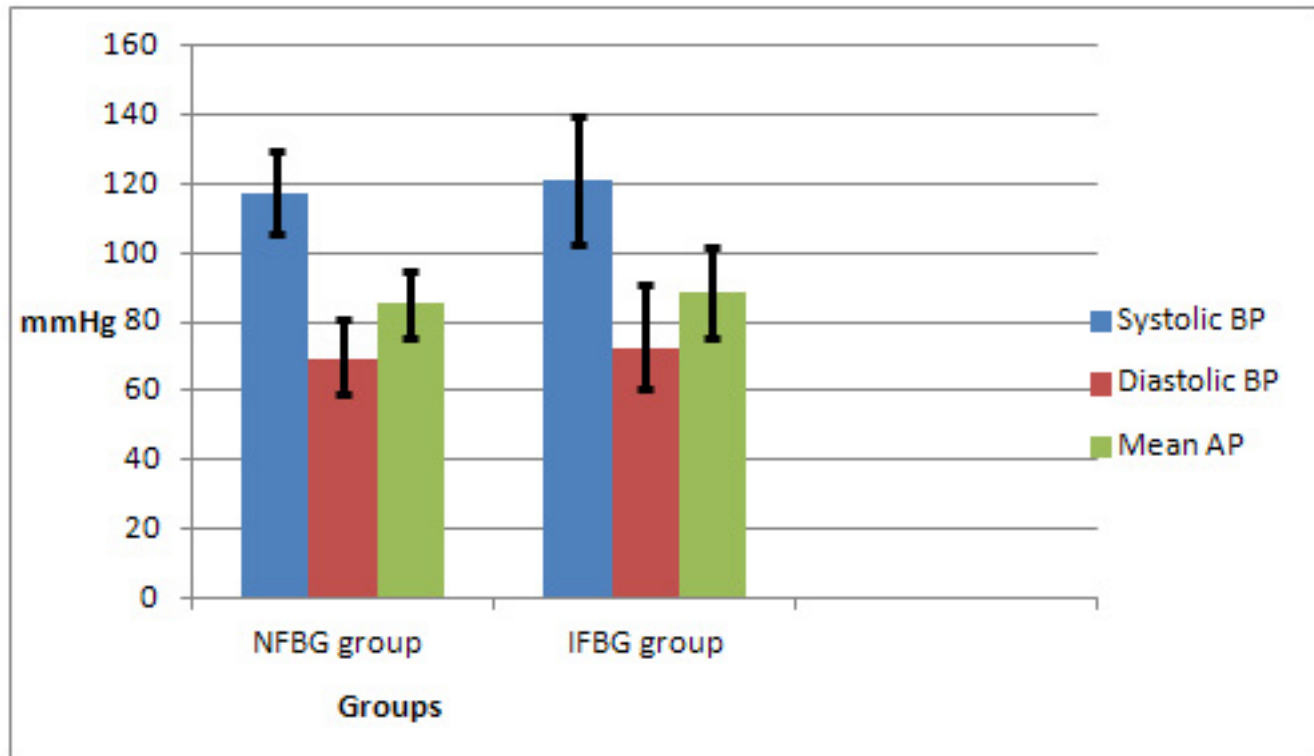
Figure 3: Comparison of Blood Pressure Parameters (Mean \pm SD) between groups

Table 6 : Pearson Correlation of Fasting Blood glucose level and (Body mass index and Blood Pressure) parameters of the studied group

Parameters	Fasting Blood Glucose	
	r	P value
Body mass index	0.109	< 0.001*
Systolic Blood Pressure	0.137	< 0.001*
Diastolic Blood Pressure	0.133	< 0.001*
Mean Arterial Pressure	0.174	< 0.001*

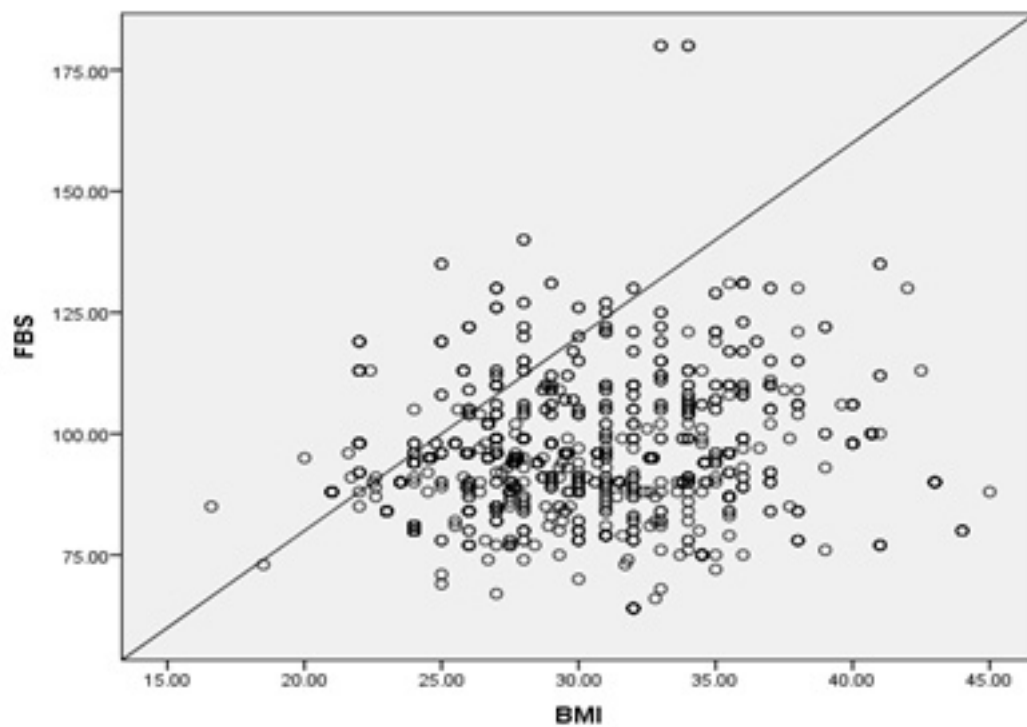
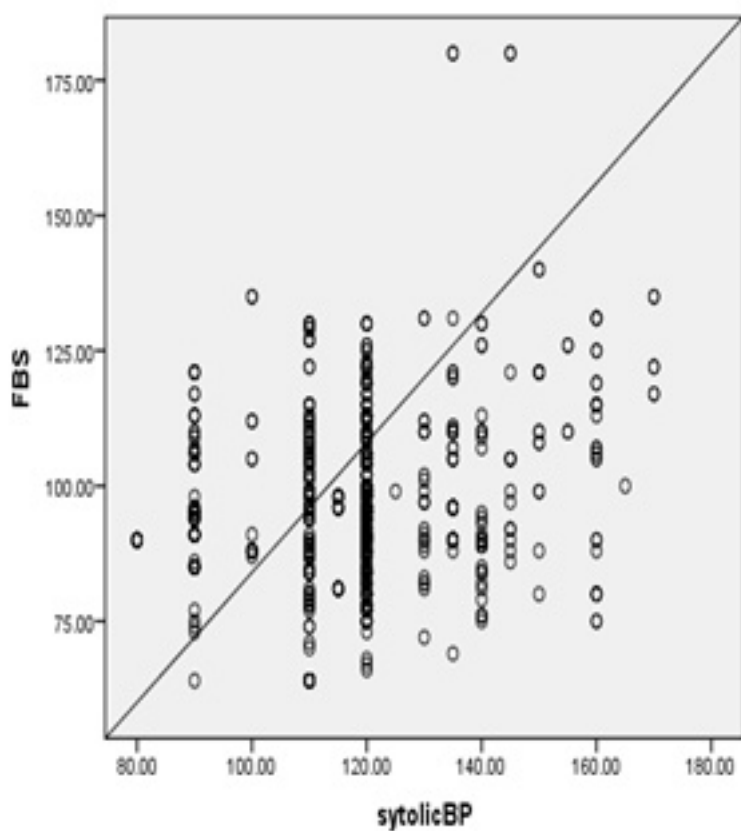
Figure 4 :Pearson Correlation of Fasting level and Body mass index parameters of the studied group**Figure 5: Correlation of FBG and Systolic blood pressure among the studied group**

Figure 6: Correlation of FBG and Diastolic blood pressure among the studied group

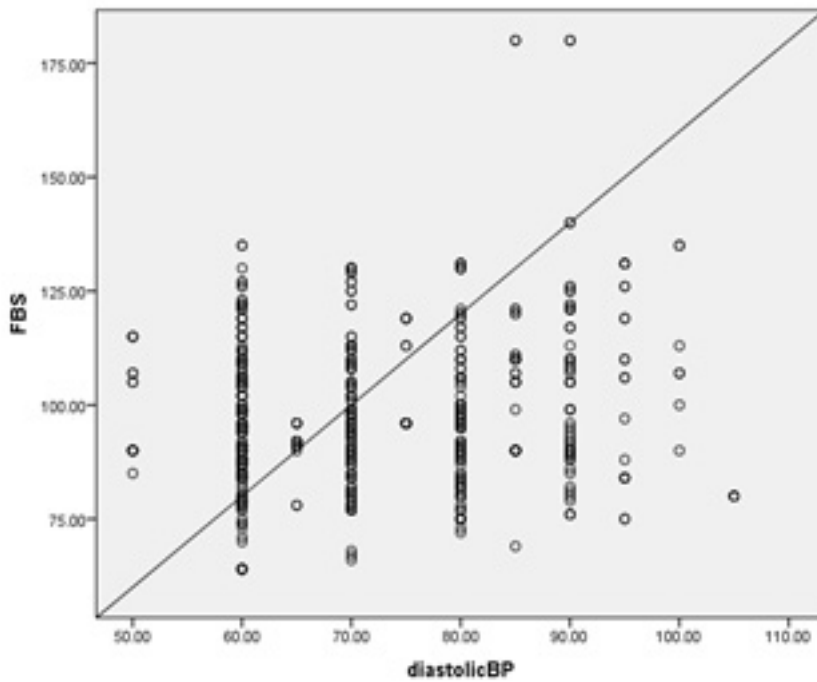


Table 7: Logistic Regression Analysis Of Risk Factors Associated With impaired Fasting Blood Glucose

Risk Factor Parameters	(Beta)	P value	Odds ratio	Confidence Interval	
				Upper bound	lower bound
Age	0.098	0.527	1.103	0.741	1.547
Patient education	-0.326	<0.001	0.722	0.681	0.765
Hypertension(History)	-0.493	0.353	0.611	0.216	1.728
Hyperlipidemia (History)	1.442	<0.001	4.231	1.878	8.531
Chronic Viral hepatitis	0.592	0.404	1.697	0.490	5.887
Drugs	0.167	0.153	1.657	0.948	1.486
BMI	0.788	0.001	2.196	1.339	3.448
Blood Pressure	0.648	0.005	1.911	1.217	3.211

Discussion

Identification of impaired stages of fasting and two hour post-prandial blood glucose (which was given the term pre-diabetes) is of growing importance as interference through these stages by modification of its risk factors may delay the occurrence of type two DM [15 & 16]. So it is important to evaluate this metabolic alteration and determine the main risk factors associated with it in our population. Strict life style changes and weight reduction is an effective preventive measure [17].

This is a cross-sectional study and the primary research question was concerned with the prevalence of impaired fasting glucose in Menoufia governorate, Egypt. This study reported the prevalence of undiagnosed DM and impaired

glucose tolerance at 4.2%, and 4.4 % respectively, while the isolated impairment of fasting blood glucose was 7.9 % of the studied group. Lower estimate was reported in Latin America; the CARMELA study reported a prevalence of IFG of only 2% [18]. Another study in Taiwan [19], had a prevalence of IFG so much higher (35.8%), while that of a USA study was 26% [20]. In Venezuela, prevalence of undiagnosed DM2 was 8.4% and that of IFG was 19.5% of their study population (2,230 individuals) [15]. Sinnott et al., [19] in their screening study for diabetes and prediabetes in Irish adults, reported a prevalence of IFG at 7.1% which is nearly similar to our finding , but they reported prevalence of undiagnosed diabetes at 1.8 % and 2.9 % for impaired glucose tolerance which is lower than this study. They explained this underestimation of DM type2 by usage of Fasting blood glucose only for screening.

In the current study, IFG was slightly higher in males (52.5) than females (47.5), which constituted no statistical significant difference between normal and impaired fasting groups. This finding disagrees with studies done by [15, 19], who reported significant increase in males and agrees with some other studies [20,21] who reported no significant difference between the sexes.

Highest prevalence of IFG was in the age group > 45 year (55.5%), with significant difference among normal and impaired fasting glucose groups. This result agrees with many studies [15, 19 and 22]. Studies attributed that to aging changes such as waist circumference [23], decreased lean mass [24] and diminished physical activity [25]. Atkins JL et al., explained that by the effect of aging on insulin resistance [24].

This study reveals that higher education was more prevalent among the normal fasting than the impaired fasting group (40.7 % versus 9.1 %). Education constituted a statistical significant difference among groups. Occupation, socioeconomic status, marital status had no statistically significant effect. Hao et al., 2014 [26], reported that impaired fasting glucose was prevalent among those of high socio-economic status in eastern China. Some studies reported no significant association between IFG and socio-economic standard of studied participants [15,22]. Aktar et al., [21] observed a positive association of educational level and socioeconomic standard with diabetes. In contrast, another study in China reported that the prevalence of diabetes was generally unaffected by educational level but was higher in the high-income group [27]. Many studies reported that low prevalence of diabetes in better educated, highly socioeconomic status group may be due to high health conscious level [28 , 29]. Diaz-Redonodo et al.,[6] reported that regarding risk factors of pre-diabetics, no statistically significant differences were found in terms of marital status or region of residence.

Regarding history of the patients, history of hypertension (OR=2.305, 95% CI 1.323 - 4.015), hyper-lipidemia (OR=4.77,95% CI 2.67 - 8.51) and viral hepatitis (OR=2.803,95% CI 1.354 - 5.804) were statistically significantly higher among the IFG group than the normal fasting group. A study reported hypertensive subjects had a 2.33 times higher risk of IFG(6). Bermúdez et al.,[15] found hypertension to be a risk factor for IFG, however this co-relation between hypertension and alteration of IFG depends on other factors different from IR, such as a certain level of chronic inflammation and oxidative stress. Diaz-Redonodo et al.,[6] reported that hypertriglyceridemia and low HDL-Cholesterol levels were also seen to be associated with prediabetes.

The current study showed that receiving medication for hypertension and corticosteroids was statistically significantly higher in the IFG group than the other group (14.1 %,12.1 versus 5.8%, 4.7 respectively) with p value =0.001. This may be attributed to that thiazide diuretics, which are a commonly used antihypertensive medication, could increase insulin resistance, affect glucose utilization,

precipitate overt diabetes and worsen diabetes control [30].

Blackburn et al ., 2006 [31] showed that there is evidence indicating that thiazide diuretics and certain beta-blockers exhibit adverse glycemic effects. Wong et al., 2008 [32], showed no significant associations between antihypertensive class and impaired fasting glucose. The therapeutic benefits of glucocorticoids continue to expand across medical specialties, although the incidence of steroid-induced or steroid-exacerbated diabetes continues to rise [33].

In this study, history of current smoking, daily exercising, and relatives with diabetes shows non statistically significant difference between the IFG group and the normal fasting group. Some studies reported that smoking is a risk factor for prediabetes [34,35], however other studies didn't report an association [6,9]. Underestimation of positive family history of diabetes may be due to not enough information among individuals about diagnosed diabetes cases among the first degree relatives, who were not exposed to medical diagnosis before. Although physical exercising is recommended by WHO for protection from diabetes, this study showed no significant effect of it; other studies found the same finding [6,9].

The current study showed that there is a statistically significant difference between the normal and fasting blood glucose group regarding body mass index and blood pressure. This was confirmed by comparing the means; the correlation which was positively increasing with increase of the values of fasting blood glucose. The association between hypertension and prediabetes has been reported in many previous studies [6,9,36]. Some studies [15,20] found similar results regarding significant association of BMI on Fasting blood glucose. This disagrees with Sahai et al., 2011[37], as the notable finding in their study was the significantly higher prevalence of IFG among the low body weight population, raising the possibility of a higher prevalence of insulin deficient state

In Logistic regression models of risk factors for Impaired Fasting Glucose for the population from Egypt, the risk factors that had the strongest prediction of impaired fasting blood glucose were history of hyper-lipidemia, obese participants and patient education. In the study done by Bermúdez et al.,[15], evaluation of the correlation between risk factors in a logistic regression analysis revealed the presence of insulin resistance to be the most tightly linked risk factor for IFG (OR=2.51; 95%CI=1.79-3.52; p<0.01), followed by age groups (>60 years: OR=2.31; 95%CI=1.23-4.35; p<0.01). Another study in multivariate analysis revealed the odds of developing pre-diabetes were 1.4 times more among those who were above the age of 45 years and 1.5 times more in those who were physically inactive [22].

Conclusion

Blood glucose in its impaired level is not a rare event and its identification in the high risk group as hypertensive

patient, patients with hyperlipidemia individuals > 45 years and obesity is important to deal with and not to ignore.

Recommendations: Based on the findings of this study , it is recommended that screening should be done to the high risk group for impaired fasting blood glucose as those with age > 45 year, with a history of hypertension even if controlled with medications, hyperlipidemia, obesity, sedentary lifestyle and low educated individuals. This group should modify their lifestyle and strictly control their blood pressure to safeguard against type 2 DM.

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Integration of mental health service program into primary health care service

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Abstract

Primary health care is the main platform for community based health services. It is the first line of health defense. The primary health care services are based on prevention, curative, promotion and rehabilitation. Mental health disorders are not uncommon and early detection and care may decrease the burden of these disorders. By integration of mental health care into primary care services, these services will be available at the primary care level and expose it to a considerable part of the community served by primary health care services. The process of integration will allow mental health care to diffuse through the pillars of primary care (prevention, curative, promotion and rehabilitation).

Key words: Primary health care, integration, mental health

Introduction

Primary care physicians form the backbone of mental health care in health care services. Not only are trained primary care practitioners skilled in identifying, treating and referring patients within primary care settings, but also with additional training, certain physicians have become responsible for the community mental health centers.

The World Health Organization is currently focusing on the importance of integrating mental health into primary health care. One of the ten recommendations in the World Health Report 2001 on mental illness stresses the provision of treatment in primary health care (1).

World Health Organization (WHO) is also re-emphasizing the need to have good evidence for what works in health care, in order to build sound and effective policies and programs for the health services. This is particularly important in countries with limited resources for health/mental health care where it is vital that they should get good value for the money spent.

In the years 1972-73, the British Journal of Psychiatry published a series of articles that reviewed psychiatric issues in the developing world (1-4). The authors all came to the conclusion that, in view of the prevalence rates of mental disorders which were comparable to those found in the developed world, and also the scarcity of mental health personnel and services, the care and treatment of mental disorders in Latin America, Africa, and Asia should be relegated to general physicians and health workers. At the same time, a working group of the WHO Regional Office for Europe produced a report that considered the question of whether primary care doctors should deliver mental health services (5). In 1974, WHO convened an Expert Committee on Mental Health to consider this question. After a week of meetings, the Expert Committee concluded as follows (6) :

In the developing countries, trained mental health professionals are very scarce indeed. Clearly, if basic mental health care is to be brought within reach of the

mass of the population, this will have to be done by health workers - at all levels, from the primary health worker to the nurse or doctor - working in collaboration with, and supported by, more specialized personnel.

The following article presented a panorama view to the issue of mental health in primary care, a brief look through the experiences of other countries and suggested action plan to integrate this service in primary care health service.

Objectives

1) Primary prevention: increase the awareness about mental health

The first step in establishing successful early intervention is to ensure that the medical profession and the community had better understanding of the potential seriousness of unrecognized and poorly treated mental illness.

2) Secondary prevention:

Treatment regimens and patient support programs need to emphasize each individual's potential for recovery.

3) Screening :

The use of evidence-based screening questionnaires that identify people suffering from underlying mental disorders has been shown to be more effective than observation or non-structured assessment alone (7). Screening has been well received in the clinical setting and is adaptable to a range of primary care settings (7). Multi-language questionnaires help a lot in primary health care settings where clients with different languages attend the service.

4) Recognize the need:

In the developing countries, trained mental health professionals are very scarce indeed. Clearly, if basic mental health care is to be brought within reach of the mass of the population, this will have to be done by health workers - at all levels, from the primary health worker to the nurse or doctor - working in collaboration with, and supported by, more specialized personnel. One unit movement towards successful mental health care is crucial. To achieve this type of movement, all primary health care staff should be aware about mental health care and integrate with other members to act as one unit.

In 1975, WHO initiated a Collaborative Study on Strategies for Extending Mental Health Care with the goal of examining the feasibility and effectiveness of mental health programs, mostly in primary care settings (6). The study took place in seven developing countries (Brazil, Colombia, Egypt, India, Philippines, Senegal, and Sudan) and had four basic components:

- The development and application of psychiatric surveys to determine the nature and extent of mental disorders;
- The training of primary care health workers in the recognition and management of a range of mental disorders;

- The establishment of mental health programs in primary care settings which would rely on the new skills of the health worker;
- Evaluation of these programs.

Estimates of adult patients suffering from a mental disorder in Colombia (10.8%), India (17.7%), Sudan (10.6%), and the Philippines (16.3%) give an average estimate of 13.9%. The great majority of cases were "neurotic" illnesses that presented with somatic complaints. More severe mental disorders, e.g. psychoses, mental retardation, and epilepsy, were notably absent, leading the investigators to conclude that few patients with these conditions (or their families) were actively seeking care. The study also determined that although significant numbers of primary care patient were found to be suffering from a mental disorder, the diagnostic sensitivity of health workers was relatively low (36.8%), identifying only about 1 in 3 cases of mental disorder. At the same time, their diagnostic specificity was relatively high (92.7%). That is, when making a diagnosis, health workers were correct in more than 9 out of 10 cases.

The results of the research among children were similar. On average, about 19% of the children interviewed in primary health care settings in the same four countries were determined to be suffering from a psychiatric disorder: Colombia (29%), India (22%), Sudan (12%), and Philippines (15%). Again, sensitivity was quite low overall (15.2%, with a range of 10-22%). Specificity was quite high overall (96.4%) - although the investigators admitted that this was the result of health workers diagnosing very few cases.

5) Training

The lack of mental health personnel in low-income countries is well documented (2-5). This has meant that any extension of mental health services in the developing countries must depend on health workers in primary care settings. However, primary care health workers in the developing world have little or no expertise in the recognition or treatment of mental disorder (8).

A study (9) using pre and post training assessment for a group of health workers in primary care concluded that the training programs had brought about a significant improvement in the knowledge and attitudes of health workers about mental disorders and their treatment. Turn off trained staff is a real challenge.

A research done in Sweden has demonstrated that the effects of training programs can be seriously diminished because people depart or change jobs (10).

Rationale for the integration

Burden of mental health on primary care

The work of Harding et al (11) showing that mental disorders comprise a significant burden of disease in the developing world has been replicated many times.

Surveys of community samples show that prevalence rates of mental disorders generally range from about 10% to 25%.

Among samples of primary care patients the prevalence rates appear to be higher, tending towards 15-30%, with a number of surveys showing rates of 45% or more.

A WHO international study found that about 25% of all attendees in primary care settings were suffering from some form of mental disorder, mostly depression and anxiety (12).

The principal reason for the neglect of mental health problems among primary care patients in the developing world is that most health systems do not consider mental disorders as a priority and, therefore, health workers do not receive the appropriate training. Both the WHO Collaborative Study on Strategies for Extending Mental Health (11) and the WHO Collaborative Study on Psychological Problems in General Health Care (12), as well as numerous other studies in the developing world, have demonstrated that mental disorders go largely unrecognized by primary care health workers.

The action plan for integration of the service:

It is an evidence based plan built on multiple phases running continuously in circular bases to assure high quality implementation.

International experiences

Raipur Rani, Chandigarh, India program (13)

Raipur Rani, a section of the Ambala District in the State of Haryana in northern India, consisted of 100 small, rural villages. The program started in 1975 based on recognized needs. Based on interviews with key informants in the community and the availability of a limited range of drugs, the program planners designated psychosis (both acute and chronic), epilepsy, depression with psychotic features, and mental retardation as the conditions to be targeted. Following the initial training, the need for supervision became apparent. Changing the attitudes of health workers about the need to attend to mental health problems in their patients proved difficult. They were reluctant to take on the care of mentally ill persons because of time constraints in the clinics; fear of the patients, claims that people did not want the treatments, and the belief that traditional methods of treatment were good enough. To overcome this reticence, the investigators began to meet with health workers once a week to guide and encourage them and to provide ongoing supervision, training, and consultation. After 2 years of implementation, the program's good outcomes appeared on the surface.

The Raipur Rani training program was considered a success because it seemed to change the knowledge and attitudes of health workers about mental disorders and began to provide psychiatric services where none had existed before.

Cali, Colombia program (14)

In this program, the health care workers received more intensive training. They received a minimum of 54 hours of both theoretical and practical training, and some received as much as 185 hours. Compared to the "usual care" (referral to the outpatient clinic of the psychiatric facility), the care given by the nurses was found to be equally effective, if not better. Although 2-year outcomes for patients in both the nurses and usual care groups had similar outcomes, those in the former improved more rapidly. The investigators also noted that the nurses were able to develop therapeutic relationships that helped the families to understand better and tolerate the patients' behavior (14).

Saudi Arabia, Experiences

The Ministry of Health established a National Mental Health Committee in 1990 to work towards primary care for mental health. One of its first activities was to implement a training program for improving primary care physicians' ability to diagnose and manage mental disorders.

Studies in Saudi Arabia have revealed low detection rates for mental disorders. In the city of Al-Khobar, 22% of health clinic patients had mental disorders such as depression and anxiety, however only 8% were diagnosed (15). In Riyadh, 30% to 40% of those seen in primary care clinics had mental disorders and again, most were not diagnosed (16). In central Saudi Arabia, 18% of adults were found to have minor mental morbidity (17). Rates were higher among the young (15-29 years, 23%), divorced people and widows (more than 40%). Suicides have been estimated to occur at a rate of 1.1/100,000 population per annum, and to be most common among men, people aged 30 to 39 years, and immigrants (17).

The Eastern Province, Ash-Sharqiyah, is the largest province of Saudi Arabia. It has an area of 710,000 square kilometers and a population of 3.4 million people (2004 census). Due to industrialization (oil production), many people have migrated from other parts of the country, mainly rural areas, to the province's main cities.

Two community mental health centers have been established in the province (18), the first in 2003 and the second in 2006. These centers provide care for referred patients, and offer support and supervision to primary care practitioners in the area.

Training for primary care physicians has been offered at two progressive levels of skill development (18).

The first level is one month of basic training in mental health issues, diagnosis of common mental disorders, appropriate use of psychotropic medications, and provision of brief psycho-therapeutic interventions.

The second level of training is more intensive and advanced, enabling graduates to manage more complicated mental health problems.

The service also offers home visits to patients discharged from hospital to community care.

Patients are supported with social and psychological counseling, and treatments and side-effects are monitored. Relationships within families are also targeted for improvement as needed.

Objectives:

- o Provide mental health services through primary care
- o Train primary care physicians and improve their ability to diagnose mental disorder
- o Help patients and families cope and reduce social stigma associated with mental disorders
- o Provide proper counseling within the community and promote the active participation of patients and their families in problem solving
- o Build bridges between primary care and mental health services
- o Improve community awareness through mental health education and promotion
- o Establish a mental health research Centre
- o Adopt screening program for National Guard communities

How to integrate the service:

Through a stepwise approach, the mental health care program can be integrated into the current primary health care system. The service will be integrated through three phases (Figure 1):

- Preparation phase: in this phase the current analysis of the situation and the need to implement the services will run. Awareness about the service among staff and clients takes place. Training short courses are running for interested staff.
- Organizing phase: in this phase the service structure takes place, mental health service committee, working teams and coordinators will be assigned. Specification of health problems priority, drug committee and guidelines committees also will take place in this phase. Non-medical preparation will take place in this phase.
- Stabilization phase: In this phase, registry for the services will be designed and continuous auditing program will run to assure the quality of the service. Long-term courses and clinical attachments will take place in this phase.

The following steps need to be followed for smooth integration of this service (figure 2). A time plan needs to be sited for each step in the action plan frame.

Step 1: Recognize the need:

Assessment of the knowledge about mental health problems among health care workers in primary health care centers (doctors, nurses, social workers) by designed questionnaires distributed through intranet.

Assessment of the resources: (drugs used to treat mental disorders (pharmacies checkup), availability of trained workers in managing mental health problems (certificates: short or long courses), availability of clinics (check centers)

Step 2: Awareness.

Start campaigns to increase the awareness about mental health problems and significance of integration of this

service into primary care (staff preparation) among staff (lectures, brochures, reminders, action cards)

Step 3: Mental health committee.

Appoint a mental health committee: the task of this committee is to support the program and act as a legally constitutional body for the ongoing development of mental health services (members selected from the high authorities staff) . Figure (3) shows the hierarchy of the program.

Step 4: Work team.

Assign work teams to oversee the processes ongoing in the program and select the screening and diagnostic tools. Members will be from different specialties including; family medicine, psychiatry, psychology, social workers and nursing.

Step 5: Coordinators.

Appointing mental health coordinators at each center to be the communication officer between the work teams and the center they belong to.

Step 6: Mental health problems priority list in primary care.

Appoint a task force team to select a list of priorities for mental health problems treated in primary health care service with collaboration with secondary and tertiary health care services.

Step 7: Training.

Initiate continuous training program: the work teams should select the curriculum. There are two types of training program:

- Short term course
- Long term course
- Attachment training to psychology hospital practice
- Special training courses

Step 8: Guidelines.

Appoint a task force team to adopt or create guidelines for mental problems management in primary care

Step 9: List of essential drugs for mental health problems in primary care.

Appoint task force team to create a list of essential drugs needed to match with the list of priorities of mental disorders treated in primary health care.

Step 10: Continuous auditing.

An auditing committee assigned to continuously audit the program and report its findings to mental health committee as well as to work team.

Step 11: Registry.

Creating a registry to register all mental health cases for either follow up process or statistical purposes

Step 12: Non-medical assistant.

- o IT team should be assigned and work in creating a digital mode of communications (SMS, digital newsletter distributed to staff regularly)
- o Secretary team should be assigned to cover the administrative work for the committee and working teams

Figure 1: Phases of integration action plan

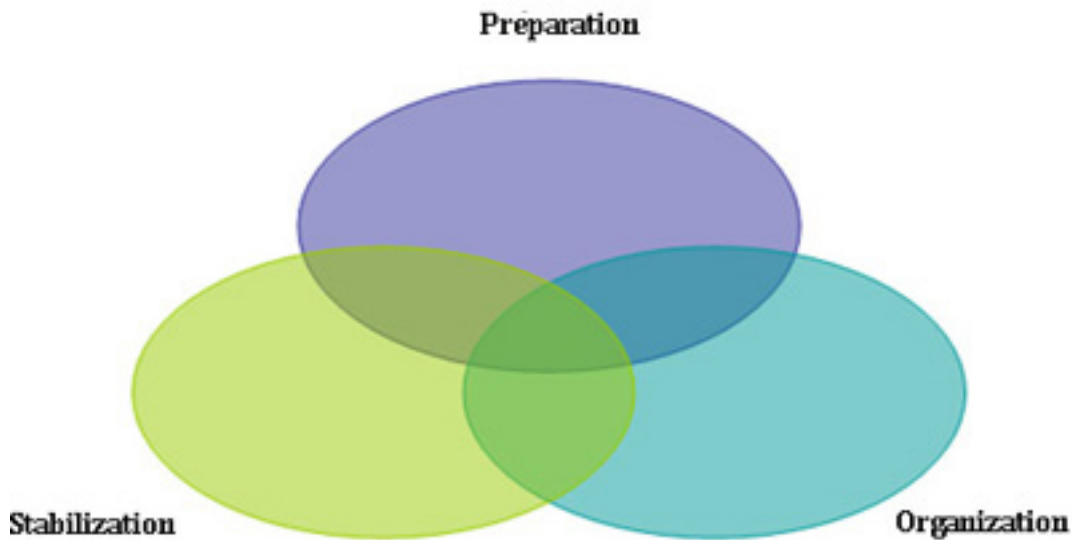
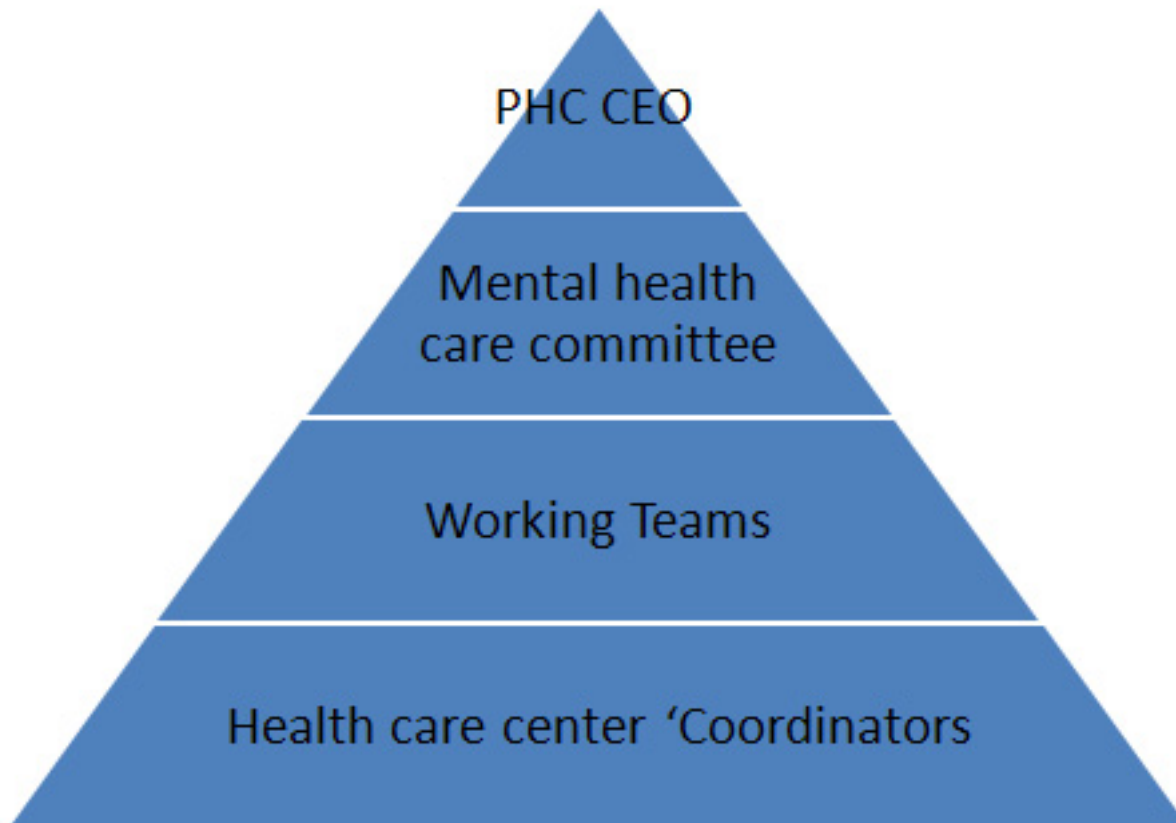


Figure 2: Structure of integrating mental health service into primary health care



Figure 3: Hierarchy of the mental health program



PHC CEO = Primary Health Care Chief executive officer

Conclusion

Mental health is an important service that needs to be available at the level of primary health care services. Primary health care is the front line of health care and the first point of contact in the health care system.

Common mental health disorders can be recognised by trained staff in primary health care centers and treated at this level. This can help to reduce the cost of health care and consumption of health care resources at higher levels.

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Suicide pattern in Kermanshah Province, West of Iran: March 2012- March 2013

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Abstract

Background: Kermanshah province (the most populated province in the west of Iran) has one of the highest suicide rates among Iran's provinces. This study aims to update the existing knowledge of suicide situations in the province in order to take the first step towards designing preventive interventions.

Methods: Data were extracted from the electronic files of the Forensic Medicine Organization (FMO) of Kermanshah province during the course of one-year. The chi-squared test and Cramer's V statistic were used to assess the associations between the demographic variables.

Results: 265 confirmed cases (65.7% males and 34.3% females) of suicide were registered during the study period. The overall annual rate of suicide in Kermanshah province was 13.6 persons per 100,000 residents. Approximately, 45% of the

cases were between 20 and 29 years old. Hanging in males (50%) and self-immolation in females (43%) were the dominant suicide methods.

Conclusion: Compared to the average suicide rate in Iran, Kermanshah province has a noticeably higher rate. Focusing on social determinants of health in the population should be seriously considered by the health system's policy-makers regarding practical approaches to be used for the purposes of reducing suicide.

Key words: Measure of association, Social determinants of health, Suicide, Iran

Introduction

Suicide is one of the most complex aspects of human behavior where a person ends his/her life with a deliberate and conscious effort (1, 2). According to suicide statistics reported to World Health Organization (WHO), suicide rates vary greatly among countries (3). There are several problems and difficulties in accurately defining, measuring, recording, reporting and scientific studying of suicide (4). Most of the problems are related to social stigma associated with this phenomenon which is prevalent, more or less, in every community (2). Also, the official suicide registration system in different communities varies (3, 5), including in Iran (6, 7). Furthermore, in some communities, more than one organization is active in identification and registration of suicide data and this issue can cause obvious differences between statistics submitted on suicide cases (2, 7).

In Iran, suicide has shown an increasing trend from 1990 to 2010 (8, 9) and distribution of suicide mortality across the country is more prevalent among the western provinces (10). Based on the information obtained from the death registration system of the Ministry of Health and Medical Education, the statistics related to completed suicide in the first nationwide study of mortality profile in 29 provinces of the country in 2004 showed that Kermanshah province accounted for 14.0 per 100,000 and stood at the 3rd place in the country in terms of high rates of mortality caused by suicide. It should be mentioned that the said national average has been estimated as much as 5.2 per 100,000 in the same year (11). Moreover, Kermanshah province was second highest in terms of suicide mortality rate in the country during 2006-2010 (10). Another nationwide study of mortality profile in 29 provinces of the country in 2010 showed that hanging and self-immolation stood at 5th place among the leading causes of death among males and females aged from 15 to 49 years, respectively (12).

With due observance to the above-mentioned subjects, analyzing the current situation of suicide among various age and gender groups of people in Kermanshah province and evaluating the suicide rates in these groups are the main objectives of this study. Based on this issue, not only can the vulnerable groups be identified, but also a giant stride can be taken in this province in order to reduce rates of suicide through updating knowledge and information required for healthcare and medical treatment planning and to use the results to take the first step towards designing preventive interventions and mental health promotion.

Methods

Ethics Statement

Before reviewing data, burial permit number, name and surname of the deceased were omitted due to respect to the principle of medical secrecy. No private information of the deceased who committed suicide was used in conducted analysis and obtained results and hence no informed consent was required for this study. The study protocol was approved by the research committee of Kermanshah University of Medical Sciences (No. 93213).

Socio-demographic Characteristics

Kermanshah province is the most populated province in the west of Iran with 14 counties, 31 cities and towns and 86 rural districts. Based on the 2011 Census of Population and Housing, Kermanshah province has 1,945,227 people and accounts for 2.7% share of total population of the country with approximately 70% of urbanization rate and nearly 16% of unemployment rate (13).

Data source

In this cross-sectional study; electronic files of confirmed committed suicide data of the Forensic Medicine Organization (FMO) of Kermanshah province collected from March 21, 2012 to March 20, 2013 were used. This electronic file contains the following variables: death time, permanent residence of the deceased including urban or rural regions. Suicide methods included hanging, self-immolation, firearms, intentional drug-poisoning, self-poisoning from toxic substances (toxic-poisoning), and others. The other methods category included cutting, drowning, jumping from a high place, and other unspecified means. The age of the deceased has been calculated according to birth year. It is worth mentioning that all identified cases were older than 10 years of age at the time of the committed suicide; hence, the age variable was grouped in four categories including 10-19 years, 20-29 years, 30-39 years, and 40 years and above. Marital status consisted of single, married and unknown. Educational status was classified into four groups: illiterate, primary and middle schools, high school and diploma, and university degrees. Previous history of attempting suicide includes yes, and no options. Consistent with previous researchers, occupational status variable was grouped in six categories including: housewife, worker and farmer, unemployed people, school/college student, self-employment and others (military man, soldier, driver, retired, other businesses and so on).

To accurately evaluate the incidence rate of suicide in Kermanshah, the first important step was to determine some criteria for inclusion in the study. For example, an autopsy performed in one of the forensic medical centers in the province by a forensic pathologist to determine the cause of death was not a sufficient inclusion criterion for participating in the study. Therefore, the cases indicating permanent postal address of the deceased person living in one of the cities or villages at the jurisdiction of Kermanshah province were analyzed in this study. Also, to quantify the data, the common procedure for recording the suicide cases was modified in this study to the effect that when the subjects of the study were diagnosed with the death caused by suicide using medical examination and pathological tests, the number of subjects of the study was registered in statistical forms of the suicide data of the same month; i.e., if the result of pathological tests of a person verifies that he/she has died due to suicide several months after the real time of death, the relevant information is recorded in the statistics related to the month when the result is specified and not in the statistics of the real time of death. Thus, to correct this procedure and prevent misclassification bias in data analysis, the researcher

had to reset the statistics of suicide cases based on the real time of death. The above-mentioned modifications resulted in the improvement of the quality of the numerator of annual suicide rates.

Incidence rates were calculated as the number of suicide cases divided by the corresponding estimated population, multiplied by 100,000. The population of Kermanshah province estimation extracted from provincial statistical yearbook for 2013 was used as denominators.

Data analysis

We first examined the distribution of completed suicide within each of the independent variable categories. The Pearson's chi-square test of independence at the 0.05 significance level and the Cramer's V measure of association were used to assess the associations between each pair of the demographic variables. The Cramer's V statistic varies from 0 (no association) to 1 (complete association) and measures the strength of relationship between nominal variables. According to this method, qualitative descriptions are associated with the following intervals: less than or equal to 0.40, poor agreement; 0.41-0.60, moderate agreement; 0.61-0.80, good agreement; 0.81-1.00, excellent agreement (14). All statistical analyses were conducted using Stata software version 12 (StataCorp LP, College Station, TX, USA).

Results

A total of 265 confirmed cases of death by suicide have been registered from March 2012 to March 2013 in the population residing in Kermanshah province, including 174 men (65.7%) and 91 women (34.3%) with a mean age of 31.3 ± 14 years (Mean \pm SD). The sex ratio (male-to-female) of the deceased stands at 1.9:1 and more than 91% of women were housewives. In addition, 195 persons (73.6%) and 70 persons (26.4%) of the deceased resided in urban and rural regions, respectively. There is no significant difference (Chi2(1)=0.2, p-value=0.662) between married and single deceased (excluding 8 cases with unknown marital status). More detailed information about variables related to the completed suicide cases are presented in Table 1. For example, it can be observed that approximately 45% of the deceased who committed suicide were in the 20-29 year age group. Since the provincial statistical yearbook had no estimates for the population of the province in each age group during the study period, calculation of suicide rate in each age group was impossible. Nevertheless, Figure 1 shows the absolute frequency of suicide methods by age groups. It can be seen that intentional drug-poisoning is notably higher in the 20-29 age group.

The absolute frequency and percentage of suicide methods by gender and living area are presented in Table 2. Overall, the most common suicide methods in Kermanshah province were hanging (42%) followed by intentional drug-poisoning (20%), and self-immolation (18.5%). The most common suicide method was hanging (50%) for men and self-immolation (43%) for women. Based on contents of

this table, 68.4% of males have committed suicide using violent methods (hanging, self-immolation, firearms) and 79.1% of females have committed suicide using the same three violent methods.

The overall annual suicide rate in Kermanshah province is estimated at 13.6 per 100,000 residents during the study period. Figure 2 shows the annual suicide rate of each county of the province. This figure shows that Qasr-e Shirin county with 27.2 and Harsin county with 7.0 per 100,000 residents respectively have the highest and lowest annual suicide rate in the province. Thus, there is an almost four times difference between incidences of suicide in these counties.

Results of Pearson's chi-square tests and Cramer's V values are reported in Table 3. According to the results, suicide method is significantly associated with gender, living area, occupation, age group, education and marital status. The corresponding Cramer's V values indicate that the association between suicide method and gender is stronger than the association between suicide method and any other factor. Similarly, we can see that gender is significantly associated with occupation, education, marital status and living area. More than 17% of the deceased had a history of previous suicide attempts but there was no statistically significant association between history of previous suicide attempts and other variables of the study.

Table 4 shows the frequency and percentage of committed suicide in weekdays. According to this table, although Monday has a slightly higher frequency based on the chi-square test for homogeneity, there is no statistically significant difference (Chi2(6)=12.44, p-value=0.053) between the frequencies of suicide in different weekdays.

Table 1: Demographic characteristics of completed suicide cases in Kermanshah province, Iran (March 2012 to March 2013)

Variable	N	(%)	Variable	N	(%)
Gender	Chi ² (1)=26.0 p-value < 0.001		Living area	Chi ² (3)=58.9 p-value < 0.001	
Male	174	65.7	Urban	195	73.6
Female	91	34.3	Rural	70	26.4
Age group (year)	Chi ² (3)=61.7 p-value < 0.001		Educational level	Chi ² (3)=120.9 p-value < 0.001	
10-19	32	12.1	Illiterate	38	14.3
20-29	118	44.5	Primary & Middle school	130	49.1
30-39	64	24.2	High school & Diploma	84	31.7
≥ 40	51	19.2	University	13	4.9
Method	Chi ² (5)=159.2 p-value < 0.001		Occupational status	Chi ² (5)=51.7 p-value < 0.001	
Hanging	111	41.9	Housewife	83	31.3
Drug-poisoning	53	20.0	Worker/ Farmer & shepherd	37	14.0
Self-immolation	49	18.5	Unemployed	45	17.0
Firearms	31	11.7	School/ College student	27	10.2
Toxic-poisoning	14	5.3	Self-employment	49	18.5
Other	7	2.6	Other	24	9.0
Marital status	Chi ² (1)=0.20 p-value=0.662		Previous suicide attempt	Chi ² (1)=104.2 p-value < 0.001	
Single	132	49.8	Yes	46	17.4
Married	125	47.2	No	209	82.6
Unknown	8	3.0			

Table 2: Suicide methods among completed suicide cases by gender and living area, Kermanshah province, Iran (March 2012 to March 2013)

Method		Gender		Living area	
		Male	Female	Urban	Rural
Hanging	Count	87	24	85	26
	(%)	50.0	26.4	43.6	37.1
Drug-poisoning	Count	39	14	49	4
	(%)	22.4	15.4	25.1	5.7
Self-immolation	Count	10	39	27	22
	(%)	5.8	42.9	13.8	31.4
Firearms	Count	22	9	16	15
	(%)	12.6	9.9	8.2	21.4
Toxic-poisoning	Count	9	5	13	1
	(%)	5.2	5.5	6.7	1.4
Others	Count	7	0	5	2
	(%)	4.0	0.0	2.6	2.9
Total	Count	174	91	195	70
	(%)	100	100	100	100

Table 3: Chi-squared statistic and p-value for the test of independence between the variables with their corresponding Cramer's V measure of association

	Living area	Age group	Education	Occupation	Marital status	Previous attempt	Method
Gender	Chi ² (1)=6.9 p-value=0.009 V=0.162	Chi ² (3)=5.9 p-value=0.116 V=0.149	Chi ² (3)=20.0 p-value<0.001 V=0.275	Chi ² (5)=240.0 p-value<0.001 V=0.952	Chi ² (2)=8.3 p-value=0.016 V=0.176	Chi ² (1)=1.9 p-value=0.167 V=0.0	Chi ² (5)=58.0 p-value<0.001 V=0.468
		Chi ² (3)=1.5 p-value=0.680 V=0.076	Chi ² (3)=7.0 p-value=0.073 V=0.162	Chi ² (5)=21.7 p-value=0.001 V=0.286	Chi ² (2)=0.3 p-value=0.858 V=0.034	Chi ² (1)=2.1 p-value=0.146 V=0.0	Chi ² (5)=29.2 p-value<0.001 V=0.332
Living area							
Age group		Chi ² (9)=58.7 p-value<0.001 V=0.272	Chi ² (15)=93.2 p-value<0.001 V=0.342	Chi ² (6)=26.0 p-value<0.001 V=0.221	Chi ² (6)=59.1 p-value<0.001 V=0.334	Chi ² (3)=2.3 p-value=0.507 V=0.096	Chi ² (15)=39.6 p-value=0.001 V=0.223
			Chi ² (15)=78.8 p-value<0.001 V=0.307	Chi ² (10)=49.6 p-value<0.001 V=0.306	Chi ² (6)=26.0 p-value<0.001 V=0.221	Chi ² (3)=5.4 p-value=0.143 V=0.146	Chi ² (15)=32.6 p-value=0.005 V=0.203
Education							
Occupation				Chi ² (10)=49.6 p-value<0.001 V=0.306	Chi ² (5)=9.6 p-value=0.086 V=0.194	Chi ² (25)=87.1 p-value<0.001 V=0.256	
				Chi ² (2)=3.6 p-value=0.166 V=0.119	Chi ² (10)=21.0 p-value=0.021 V=0.199		
Marital status							
Previous attempt						Chi ² (5)=4.4 p-value=0.496 V=0.131	

Table 4: Absolute frequency and percentage of completed suicide according to days of week, Kermanshah province, Iran (March 2012 to March 2013)

	Female	Male		
Total	12	22	Frequency	Saturday
34	12	22	Percentage	
12.83%	13.19%	12.64%		
29	10	19	Frequency	Sunday
10.94%	10.99%	10.92%	Percentage	
51	18	33	Frequency	Monday
19.25%	19.77%	18.96%	Percentage	
42	11	31	Frequency	Tuesday
15.85%	12.09%	17.82%	Percentage	
46	17	29	Frequency	Wednesday
17.36%	18.68%	16.67%	Percentage	
27	12	15	Frequency	Thursday
10.19%	13.19%	8.62%	Percentage	
36	11	25	Frequency	Friday
13.58%	12.09%	14.37%	Percentage	
265	91	174	Frequency	Total
100%	100%	100%	Percentage	

Figure 1: Age-distribution of completed suicide cases by suicide methods, Kermanshah province, Iran (March 2012 to March 2013)

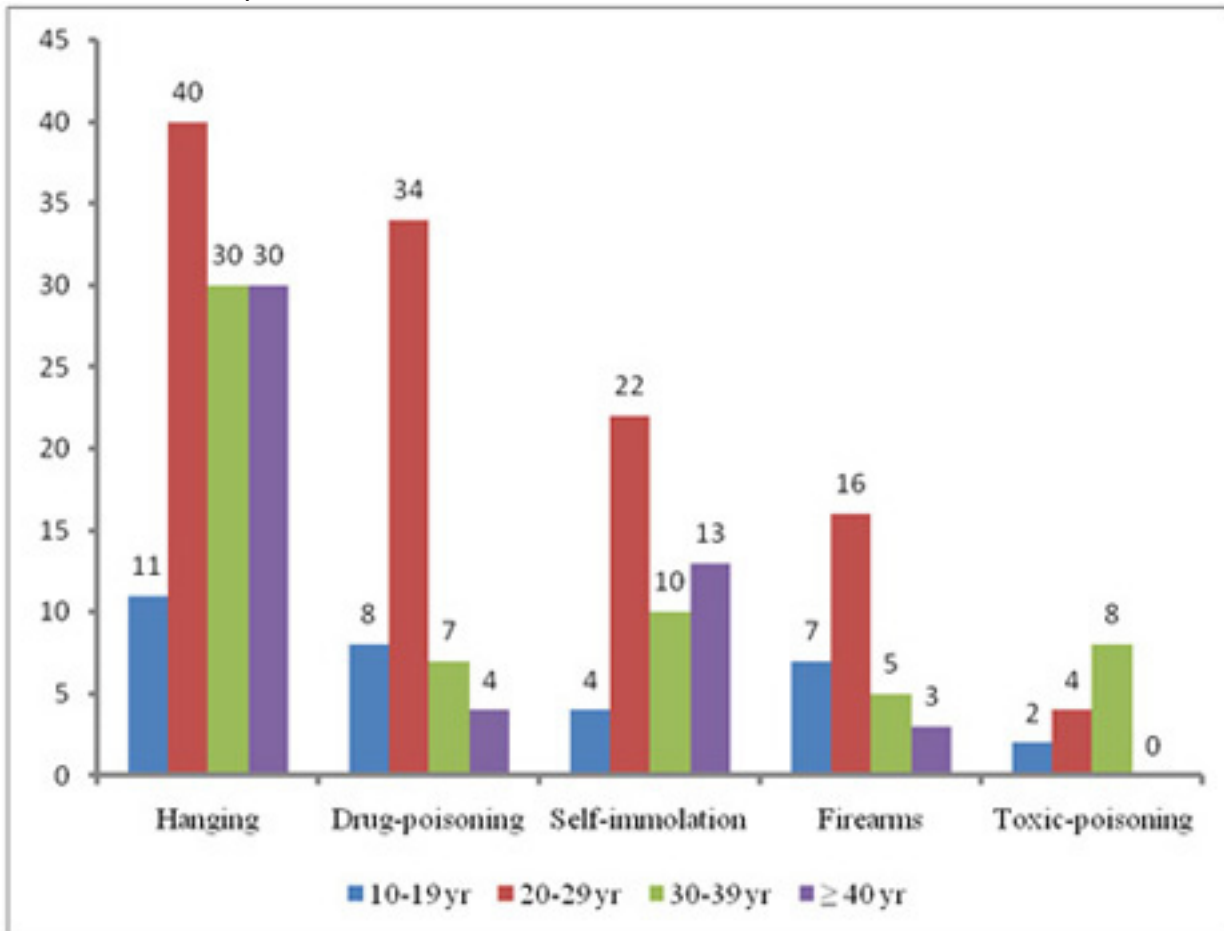
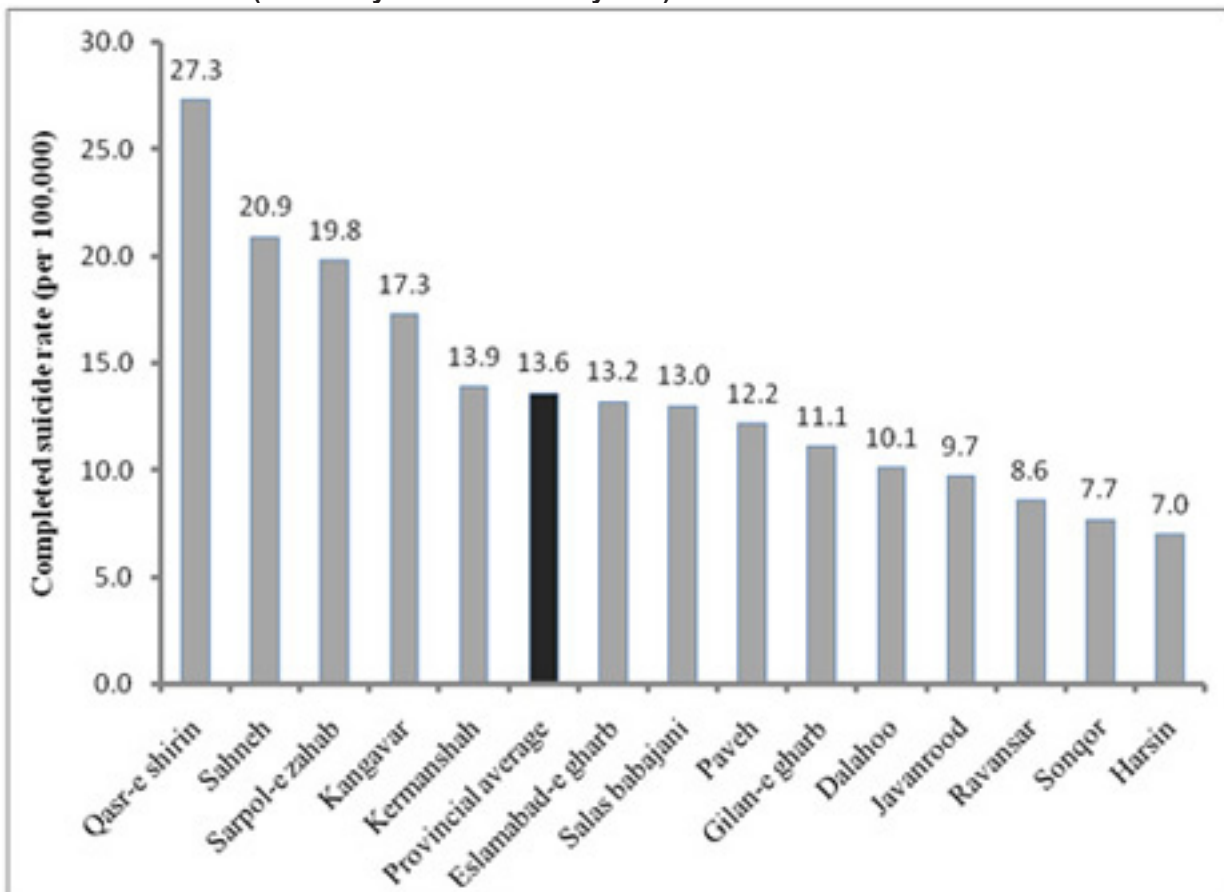


Figure 2: Annual rates of completed suicides according to the counties, Kermanshah province, Iran, March 2012 to March 2013 (ranked by suicide mortality rate)



Discussion

As it is observed from results of this study, completed suicide has been focused on in the present study. The completed suicide statistics had appropriate reliability, because the records and reports of the death due to completed suicide had higher accuracy in comparison to attempted suicide statistics (15, 16). Based on the obtained results, the overall annual rate of completed suicide in this province stood at 13.6 persons per 100,000 people, and suicide rate was observed more in urban regions than rural regions. One of the most important causes for this event could be increased level and rate of urbanization in the province as a result of rapid migration of rural inhabitants to urban areas. Such change in the living environment has not been adequately coupled with concomitant cultural adaptation. In this regard, the completed suicide rate in this province is much higher than that of the national suicide rate (10, 17, 18). Some of the main reasons for the high rate of committing suicide in western provinces of Iran have been mentioned in previous research (2, 7, 10, 17). The ratio of males who died by suicide was higher than that of females, so this finding is consistent with the results of previous studies (16). The present study showed that the majority of the females who committed suicide were housewives. The reason for that is most middle- and old-aged females in Iran are housewives without income. Therefore, it seems rational that the majority of the females who committed suicide are housewives (16). The noticeable point is that Kermanshah province stood at the 3rd place in the country in 2004 in terms of death rate due to suicide, while four counties of Sarpol-e Zahab, Sahneh, Harsin and Qasr-e Shirin (all located in Kermanshah province) were among the highest death rate caused by suicide across the country (11). In the present study, three counties of Qasr-e Shirin, Sarpol-e Zahab and Sahneh are among the highest suicide rate yet (approximately 20 persons per 100,000 residents and higher).

High unemployment rate in this province, compared to the other provinces, has been cited as one of the main probable reasons for the high rate of suicide in Kermanshah province. Of course, relationship between economic problems and unemployment with suicide in Kurdish ethnicity has previously been mentioned (16, 17, 19, 20).

As mentioned, hanging and self-immolation are the main methods of committing suicide among males and females respectively; this finding is consistent with the pattern of suicide methods observed in previous years in this province (16) and also with the governing pattern on the whole country (21, 22) and in Middle Eastern countries (23). Based on this study, intentional drug-poisoning is the 2nd most common method that leads to deaths due to suicide. This method is frequently used in young female attempters and also is one of the main methods of suicide in males (24). Frequently use of violent methods in western provinces of the country such as Kermanshah province may be due to post-war problems between the Iran and Iraq. This is an important issue since, the outbreak of the Iran-Iraq war in most parts of western provinces of the coun-

try including Kermanshah province has been cited as the one of the main reasons for occurrence of violent behaviors including suicide (19, 25). The reasons for the high incidence of suicide by hanging have been studied, the results of which indicate that hanging is a more acceptable method, and death caused by hanging is less likely to be misclassified in the death group with ambiguous reasons or accidental death due to the transparency of death method (24, 26). If we study self-immolation as the main cause of death, it can be mentioned that this aggressive and violent suicide method is mostly common in developing countries such as Iran and other Middle Eastern countries (2, 24, 27). Among the main factors that influence the acceptability of suicide by self-immolation, we can refer to Kurdish ethnicity, female gender, young adult age (19), adjustment disorder (19, 28, 29), cultural differences in attitude towards self-immolation, storage and accessibility of inflammable liquids at home and also storage of kerosene at home for cooking usage (18). All of these factors play an important role in highlighting this violent suicide method in Kermanshah province and even "copycat" phenomenon can be influential with regard to the acceptability of this violent suicide method (17). It should be kept in mind that like other societies suicide is a phenomenon that conflicts with religious and socio-cultural values in Iran (2, 15, 20); so the true suicide incidence rate might have been underestimated (16). Undoubtedly, increasing mutual cooperation and collaboration among official organizations involved in registration of suicide statistics is one of the most effective measures to promote quality of death registration system's data in Iran (6).

Our results furthermore highlighted that most cases of suicide in this province occur in age group of 20-29 years. Also this finding is consistent with the results of previous studies (9, 16, 17, 25, 27, 30), and the average age of the study subjects at the time of death is similar to the age of the deceased from completed suicide in this province (11).

It should be noted that the previous history of attempting suicide is one of the recognized risk factors of subsequent suicide (18, 31). In this study, more than 17% of the deceased caused by suicide had a previous history of attempting suicide, so that activation of mental health services after attempting suicide for the doer and his/her family (15, 31) is similar to launching an online telephone line by psychiatrist or hospital admissions for high risk cases (31) which can play an important role in prevention of re-attempting suicide coupled with reduced rate of suicide as well.

In western countries, most suicide cases occur on Mondays and Tuesdays (32, 33). In our study, there is no significant difference among the frequencies of suicide in weekdays. It should be noticed that the pattern observed in western countries may be related to the early days of the business weeks but Monday in Iran is the middle of the weekdays. The pattern should be taken into reconsideration within the longer time frame using suicide data of other regions of the country.

Considering the above-mentioned issues, substantial efforts for preventing suicides are needed in western provinces of the country (10, 18). The policymakers of the health system of the country must seriously take into consideration the revision of suicide prevention programs and treatment of mental and reactive disorders, especially major depression, substance use disorders, bipolar disorders, mood and anxiety disorders (9). We further suggest that more information needs to be gathered specially within suicide prevention programs. These might at the very least include: “the causes for suicide”, “any preceding psychological disorders among suicidal cases” and “the types of any medical treatment they received”.

The following are considered as the main reasons influence on the increase in suicide cases in the Middle Eastern countries: Lack of success of regional countries in accurate and suitable transfer of Islamic values and principles to the young generation; superficial attention to the Islamic rules and not paying due attention to the depth of these rules (such as inattention to the fair distribution of wealth in society and its role in prevention of suicide); inferior position of women in some Middle Eastern countries dating back to the old culture and tradition of the countries, such as forced marriage (23). It can be understood easily that suicide is a very complex and multidimensional problem and tackling this problem requires joint efforts of all people, society and governments.

There are several practical strategies to reduce the completed suicide rate and to promote the mental health of society across the province. All of these effective strategies and community-based interventions should be taken into consideration by policy-makers of the health system to reduce the incidence of suicide in the west of Iran:

- Paying enough attention to enhancing social equity and alleviation of economic problems and unemployment rate;
- Dissemination of culture of simple living in society, especially among young couples;
- Increasing the number of family counseling centers and training at-risk individuals about coping skills;
- Making effort in line with promoting position of females in society with emphasis on increasing participation of women in the workforce;
- Making effort in line with adjusting conflicts as a result of incongruousness and clash of modern and traditional values.

Acknowledgments

The authors would like to thank Mr. Shahab Rezaeian (PhD student of Epidemiology, Shiraz University of Medical Sciences, Iran) and Mrs. Hadis Asadi (MSc of Nursing); as well as the chairman and personnel of Imam Khomeini hospital (Eslamabad-e Gharb, Kermanshah, Iran) for their collaboration throughout this work.

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Academic publishing in the modern era

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Abstract

This paper looks at a variety of issues surrounding current academic publishing and asks if they are contributing to the demise of what was once a respected and authoritative process.

It also looks at scam and predatory publishing in the context of the increasing commercialisation of education generally, including commercialisation of academic journals, universities, and research.

Key words: academic publishing, scam and predatory publishers, commercialisation, elitism.

History and Background

A scientific or medical journal is a serial publication intended to improve existing knowledge or processes, within a scientific, technical or medical discipline. These journals deal with a variety of academic endeavours, be they experimental, clinical investigations, case studies, Literature Reviews or reporting of new research.

Journals have existed for 3-4 centuries and an early 17th century example is the *Philosophical Transactions of the Royal Society*, which still exists in modern form and was originally created in the belief that science could only be properly advanced through an exchange of ideas backed by evidence. (1) This approach is followed today.

The history of academic publishing has seen some notable frauds, for example, articles on cold fusion, and articles using faked fossils, but there is no certain evidence as to whether the publishers of such articles were aware of these frauds. At the least they did not apply due process, sufficiently, to identify the fraud.

Initially journals were produced by medical and scientific societies purely for altruistic and educational purposes but commercial publishers began to acquire the most respected journals in the 1960's and 1970's and through various charges made them commercially successful. While commercialisation extended their reach, this was possibly also the start of the inevitable demise of academic publishing. Five such commercial publishers (Reed Elsevier, Springer, Wiley-Blackwell, Taylor & Francis, and Sage) still publish over 50% of current academic and scientific research. (1)

The remaining 50% is made up of journals produced by medical and scientific societies, universities, and other smaller publishers, with an increasing number of journals

becoming Open Access (OA) online. Open Access has mainly come about due to the inability of reputable publishers, to publish profitably on paper or at the least, cover their costs. Others have been born purely of what they see as economic opportunities connected to OA publishing and the needs of students and academics to meet their institutions' publishing requirements. A few have been established for purely altruistic reasons.

Currently academic publishing is meant to be definitive and authoritative and carefully vetted by the scientific and academic community through peer review. Plagiarism and false research still persists to some degree however.

Is the Current System Helping to Cause the Problem?

While there have always been private universities and private academic publishers, symptomatic of the lowering of standards in many aspects of modern life, predatory and scam publishing is proliferating.

Universities themselves are relying increasingly on industry funding of research and in many countries all levels of the education system are accepting sponsorship. The problem is multi-faceted and we explore some of the issues involved, however the acceptance of sponsorship in primary, secondary and tertiary education is mostly due to government inability or unwillingness to financially support and value the integrity of educational systems and sectors.

Research is mostly about big business these days. Big business is about market share or market domination. There are few people, apart from government based organisations, that part with research dollars for altruistic reasons.

At tertiary level there is pressure and requirement on students and academics to fulfil annual quotas of articles published and the first and obvious issue is there are likely more articles in need of being published than there are reputable and indexed journals. This sheer volume of articles coming out of academic institutions is at unprecedented levels and academic publishing may now be an unrealistic expectation of academic institutions and as such may have contributed in part to this new era of 'convenience publishing' and scam and predatory publishing.

This pressure to publish can also lead to plagiarism, and articles of little merit. Perhaps universities should look at their systems and processes and turn the focus to quality of research articles and not quantity.

At the same time the cost of producing paper based journals, the traditional journal, has become increasingly expensive and prohibitive and many long established academic journals are now issued solely online, for example, the British Medical Journal (BMJ). Electronic forms of publication also address a vital global problem, that of the increasing destruction of the environment, and with the universal availability of the internet, this is, or

should be, a worthy and egalitarian improvement in many regards, however the internet has also facilitated a wide range of fraudulent and criminal activity, such as scam and predatory publishing.

Additionally many publishers with a good track record who are still adhering to paper based publishing are seeking to ally or monopolise, while others are indulging in unprofessional and questionable tactics to maintain profitability and market share when in fact the market may no longer be capable of the great financial returns these publishers once enjoyed.

There are new and established reputable open access publishers and journals eking out their viability in a reduced marketplace along with those with no merits or standards whatsoever that have proliferated to meet the publishing demands of students and academics.

Quality of academic research and publication also greatly depends upon the quality of the academic staff and funding of the relevant university.

Commercialisation, Protectionism, Elitism and Prejudice

Unfortunately protectionism, prejudice and elitism have become the survival focus and method for some traditional and long standing publishers and academic databases.

The author pay system while resisted by most reputable publishers for a long while has become one of the few means that reputable publishers have had to cover costs, especially for those publishers who won't or don't take advertising on websites or paper publications. Perhaps those not charging processing fees have become more prone to outside influence and commercial pursuits because of this.

Once many medical colleges and scientific societies subsidised or published their own journals, but soaring costs have largely now prevented this. They now resort to commercial academic publishers but they expect their journals to be included in the major established academic databases accordingly. From what can seem to be protectionism, prejudice, commercialism, elitism or poor processes on behalf of some databases, such outside parties are too often refused access or inclusion on prejudicial criteria while at the same time the databases still claim to be academic, global and representative of all quality material published.

In the case of third world countries, places where medicine for example is practised where modern drugs or diagnostic equipment are not necessarily available, articles catering to their specific needs and suiting those conditions should be as worthy as those on more expensive so called modern medicine, but rarely do such appear in the journals of major commercial publishers. This suggests elitism in evaluative criteria. On whose criteria is a paper from a multinational drug company's latest trials of a slightly new formula of say, a cardiovascular drug formulated solely to qualify for a new commercially protective patent, deemed more important

than a case study on a rare complaint that only affects some children in an underdeveloped and impoverished African country? In a world where there is a great divide between the richest and the poorest, academic publishing can often exacerbate the effects of poverty, inequality and deprivation.

Issues of protectionism have not only led to predatory and scam publishing on the one hand they have also caused the rise of new scholar and academic self-archiving databases. While these entities have universal access they do not tend to follow formal academic standards and requirements such as peer review. While they may assist in egalitarianism some listed articles may not meet the definition of the term 'scholarly'; rather they may also contribute to legitimisation of substandard work and scam publishing. All of this has led to a degree of bankruptcy in what was once a reputable system, which could essentially be relied upon.

It has however also caused the rise of new reputable journals (usually open access) with their aims or the necessity, to bypass these protectionist systems and databases where country of origin seems to be more important than content. Protectionism may be destroying the very publications they set out to protect. Freer access provided for reliable publishers and authors among their competitors could have saved the industry of academic publishing. Holding onto market share can often seem their main criteria.

A commercial entity need not support the products of another organisation, commercial or philanthropic, but nor should they then claim to be representative of all meaningful academic publishing and research in their sector.

Where is the justification for outdated criteria and processes that are not born of the modern world and the world of ready communications for all? All medical articles needing to be in English may be a practical and expedient measure, but it is hardly fair practice. It can rightly be seen as elitist, and prejudicial.

If authors are to be kept at the mercy of outdated practises and some prejudicial databases maybe the entire process needs to be reviewed. Otherwise it will increasingly fall into the hands of the disreputable; the rot is often within the decaying establishment and the protectionist trying to maintain their advantage.

If papers are self-archived on online databases that offer no review of content and process we find ourselves not really able to trust any part of the system even if such self-archived articles are of high quality. Do we just abandon the system or do we look for a new non time-consuming, reliable formula or grading system that can be applied across the board to all academic research and publications without fear or favour and preferably without additional cost, to allow the reader to pre-judge the value of the article.

Currently, a researcher has to search a number of databases, often user-pay databases, to ensure adequate

coverage of knowledge on a topic. Once humanity advanced on the back of the thinking and endeavours of all humans but now it seems the commercial world has to some degree devalued this age old egalitarianism and means of general advancement.

Scam and Predatory Publishers

Ethical publishers and authors are increasingly having their journals scoured by parasitical and predatory organisations masquerading as publishers, purely to exploit the authors or the publishers themselves. They are just another example of the disreputable elements that swarm over the internet looking to make 'quick money', from what can be a well disguised unethical process to blatant outright theft. In doing so they harm all parties concerned; the authors who believe they are having their work issued in what seems to be a reputable and read academic journal, to the ethical and professional publishers who invest time, money and reputation into their literary products. They also harm scientific societies and organizations plus the progress of science itself by wasting effort and money into which the various parties involved have invested to produce their manuscript (2).

While the intent of these scams is always the same, the modus operandi can vary.

Some scam or predatory publishers may approach a published author and ask them to 'sign a contract', to produce a certain number of articles. Eventually the authors realise they are working with frauds and try to withdraw from these contracts, or find they do not have the time to meet their demands. Then such authors find themselves threatened with implied legal action causing both personal distress and professional embarrassment in front of their peers and fellows or academic institutions. Such authors find these contracts are cleverly worded and always falling on the side of the fraudulent organisation.

We distinguish between scam or sham publishers, where there is no intent or effort to publish any such journal or magazine they have described to authors, and predatory publishers who will issue the work but without the necessary professional, review, copyright or other due diligence employed by reputable publishers. Let it fall on the heads of the authors if they have inadvertently slandered, plagiarised, or even accidentally typed an extra zero on some vital medical or scientific algorithm.

A further method is inviting authors to write for what seems to be a fit and proper publication with no mention at all that there is a fee involved until the author has committed and or approved and even signed a copyright release form. Again they can be personally or legally threatened until they part with their money.

With the proliferation of material on the internet it is difficult for the average person, particularly the young starting out in their careers, to distinguish between long established or authoritative organisations and those with flashy websites

and many buzz words but no substance or integrity. Indeed there seems to be a deliberate targeting of the young author, the author who does not speak English as a first language, those authors not acquainted with acceptable cultures of publishing and those authors who may be naive or unaware of their legal rights (2).

Spotting the Predatory, Scam or Unethical Publisher

Sometimes these publications name distinguished professors, scientists or practitioners as a member of their editorial board without seeking their permission. Conversely they may also ask less reputable or less knowledgeable colleagues to pay to appear on their Editorial and other Boards. Presumably the purchasers of these positions buy the 'implication that they are experts in their field' and are, for their fee, complicit in assisting to mislead naive authors as to the standard and standing of the journal.

A reputable publisher usually has a reasonably long track record and their journals have the same.

A reputable publisher issues under International Copyright law and has an ISSN (for print and or online). Copyright Law protects authors just as much as publishers, and disallows any further use misuse or 'selective use' of the authors' material without their written consent and knowledge.

A reputable publisher usually has their own or accepted database distribution channels and contributes author's work to various academic indexes.

Predatory and scam publishers often state that they will publish an article in a very short period of time. This obviously suggests to the wary author that they do not go through a rigid review process. While it may seem flattering why would a major publisher approach an author when in reality they should have more submissions than they can publish? Authors should be even more wary if such publisher suggests their manuscript will be approved prior to sighting it.

Authors should check the displayed Author information carefully and completely. Messages the predatory publisher may not wish authors to notice are usually at the very end of Instructions to Authors, for example, any hidden fees.

Check the quality of the language on the website of the publisher approaching you. It should be both perfect in grammar and language and be of high academic standard in content.

Read the fine print of any offers and if unsure, obtain legal or professional advice.

Check if the publication has an Editorial Board of reputable members. Contact one of those people if you wish to check. Disreputable publishers have been known to list names and reviewers that may have not agreed to appear on those boards, or who may even be fictional.

Scam or predatory publishers can often select a journal or publication title that is similar or even identical to a reputable publisher.

There are worthy academic websites around that peers and colleagues recommend you consult. A well recommended website is that of Jeffrey Beall, Associate Professor Scholarly Communications Librarian, Auraria Library, University of Colorado, and Denver, USA.

Professor Beall advises "The world of scholarly publishing has changed greatly in the past ten years. In the past, researchers generally did not have to pay to publish, and most journals were high quality and respected. Now with the advent of open-access journals, authors - rather than libraries - are the ones financing scholarly publishing, through payments charged to them upon acceptance of their articles for publication in open-access journals. This change has led to the appearance of many fake journals and publishers, and they exist only to earn as much money from authors as possible. These "predatory publishers" do little or no peer review and quickly accept most or all submissions, sending a bill to the author. I am the author of a blog that lists many of these predatory publishers. You'll find the blog, Scholarly Open Access, located at: <http://scholarlyoa.com>. The lists serve as blacklists, and my recommendation is that researchers avoid submitting their work to all the journals from all the publishers on the publisher list, and all the journals on the standalone journal list." (3)

Or you can simply type in the Publisher's or Organisation's name and the word fraud or scam beside it in your search engine and if they are not reputable a string of angry correspondence will usually appear.

If you do come across a sham or predatory publisher let your peers and colleagues know about them, whether you are a student or an academic.

Young postgraduate students or the novice author unsure about a particular publisher should ask a librarian or academic supervisors or advisors.

Most scams can be avoided with a little common sense and a little general research.

Recommendations

Academia as a whole needs to look at these issues and find a cost effective means of both protecting the quality and standards of research, universities, academics and students and their various publications in a globally friendly system that ensures quality and integrity. This is still the case in many countries, however the rot is setting in and more than ever vigilance needs to be maintained.

It is also up to governments, those that can afford to, to fund quality education but within an egalitarian approach and with proper integrity, standards, balances and checks.

A standard universal grading system for all academic publications, along the lines of a quick electronic checklist may help alleviate some of the problems for authors and readers alike.

Taking a further step back from this, what is the reason for listing the world's research and academic endeavour and do we need for it to be guaranteed as reliable? If human society is to advance at all in a fair and proper way and overcome the many current impediments to pursuit of excellence, social justice, and parity and not fall into the general decay we see around us, it is vital.

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