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Original Article

Awareness of Cancer Prevention and Early Detection among Libyan Population

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Abstract

Cancer is the leading cause of disability and death in both men and women worldwide. In Libya, 14% of the overall deaths are attributable to cancer. This study aims to determine the awareness level of cancer prevention and early detection among Libyan people. A descriptive cross-sectional study was conducted from the first of January until the 27th of April 2021 through an online questionnaire. Data was collected from 328 adult people (18 and above) from different geographical areas in Libya. A descriptive statistical analysis and Chi-square test were performed to assess the socio-demographic factors and their association with cancer prevention and screening practices. Recognizing warning signs and symptoms of cancer ranged between 40.2 % for diarrhea and constipation and 86% for unusual lumps. Being female is significantly associated with attendance of educational programs and screening examinations. Older age groups practised cancer screening more than younger. Moreover, the medical work field was significantly associated with attendance of educational programs, doing screening examinations and participation in cancer awareness campaigns. Cancer awareness is the key to early detection, and the need for cancer awareness programs cannot be disregarded. Health education is necessary for the whole population and that to encourage cancer prevention and early detection among the Libyan community.

Keywords: Cancer, cancer prevention, awareness, screening, Libya

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Introduction

Worldwide, cancer is the number one cause of disability and death in men and women [1]. It is responsible for 14% of all fatalities in Libya, and the most prevalent cancers in Libya include colorectal, lung, breast, and prostate cancers [2,4]. Nowadays, it is commonly accepted that a number of risk factors, including smoking, alcohol consumption, poor diet, lack of exercise, exposure to ultraviolet radiation, and air pollution contribute to the development of cancer [5]. Additionally, it has been discovered that few chronic infections, which are more common in low- and middle-income countries, can operate as risk factors for cancer [6]. Almost 13% of all cancer diagnoses worldwide in 2018 were attributed to carcinogenic illnesses; Helicobacter pylori, the human papillomavirus, the Epstein-Barr virus, and the hepatitis B, C, and D viruses are among these infections [6,7].

According to recent research, between 30% and 50% of malignancies can be prevented by employing the most recent knowledge, making necessary changes to lifestyle, and avoiding or minimizing the main risk factors [8]. For instance, giving up smoking would help to prevent more than 90% of lung cancer occurrences [9]. Also, it has been shown that keeping a healthy weight, participating in moderate daily physical activity, limiting the consumption of red meat, quitting smoking, taking vitamins, and refraining from alcohol can prevent around 70% of colon cancers [10, 11]. Furthermore, restricting weight gain in middle age, avoiding prolonged use of hormone replacement treatment, and lowering daily alcohol consumption are being evaluated as feasible methods to prevent breast cancer, particularly after menopause [11]. Furthermore, various cancers can also be prevented by using currently available evidence-based preventative methods. Vaccination, for instance, can be used to prevent human papillomavirus (HPV) infection, thus reducing the risk of cervical cancer [12].

Cancer screening and early detection aim to combat the disease by detecting the tumor or its precursor lesion early. Thus, education on recognizing the earliest signs and symptoms and screening high-risk individuals are important strategies for enhancing early cancer diagnosis. For example, Pap smear test, mammography,

occult blood tests, sigmoidoscopy, and colonoscopy are among the main screening tests that could be applied for cervical, breast, and colon cancer screening, respectively [11,13,14]. Prostate-specific antigen (PSA) is also often used for prostate cancer screening, however, its value is still up for debate [15]. It is generally advised to participate in the current screening programs for colorectal, breast, and cervical cancer.

The lack of public awareness regarding early cancer detection and prevention is one of the most important factors contributing to a large number of tumor cases presented in advanced stages. Reliable and comparative studies of the impact of cancer risk factors at the population level are necessary for the development of policies and programs that will carry out such interventions. The purpose of this study aimed to assess Libyan people's awareness level of cancer prevention and early diagnosis as well as to evaluate their knowledge about the warning signs and symptoms of cancer.

Methodology.

The study is a part of a wider investigation that sought to evaluate Libyans' familiarity with environmental carcinogens. This study is a descriptive cross-sectional study that used an online questionnaire to collect data from the first of January to the 27th of April 2021. The survey includes a variety of questions to assess public knowledge of cancer prevention and the success of awareness campaigns.

The questionnaire was distributed across various official groups and pages on different social media platforms. Data were gathered from adults (18 years of age and older) in several Libyan regions. The data analysis software IBM SPSS version 27 was used for data analysis. Descriptive statistical analysis was used to determine the respondents' socio-demographic information. In addition, obtaining frequencies and percentages for various inquiries involving public awareness of cancer prevention and awareness activities.

Results

The study included 328 Libyan participants aged 18 and above, 77% of research participants were women, and roughly 94.5% were either graduates or post-graduates. Other socio-demographic characteristics of the respondents are shown in Table 1.

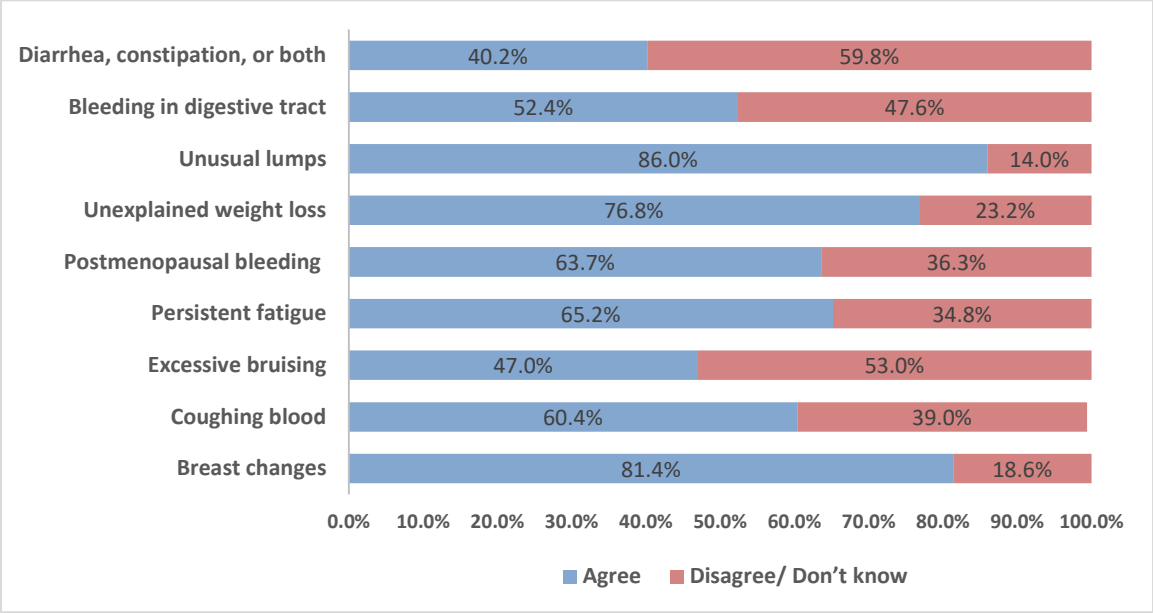
Table 1 Socio-demographic characteristics of respondents (N=328)

Socio-Demography		%
Gender	Male	22.9
	Female	77.1
Age	18 -25	26.5
	26 – 45	63.1
	46 – 65	9.5
	66 and more	0.9
Education	No formal education	1.2
	Primary and secondary	4.3
	Graduate	56.7
	Post-graduate	37.8
Residence area	West of Libya	84.8
	East of Libya	2.1
	South of Libya	6.1
	Living abroad	7.0
Field of work	Medical	47.9
	Non-medical	52.1
Income	No income	23.5
	Less than 500	9.1
	500 – 999	30.5
	1000 – 3000	31.7
	More than 3000	5.2

Awareness of warning signs/symptoms

The participants recognized several of the most common warning signs and symptoms of various types of cancer. Only 40.2% of the 328 participants recognized that diarrhea and constipation could be signs or symptoms of cancer. Similarly, 47% identified excessive bruising as a cancer symptom. on the other hand, unusual lumps (86%), breast changes (81.4%), and unexplained weight loss (76.8%) were the most commonly recognized cancer warning signs and symptoms. Figure 1 summarizes the level of awareness of cancer signs and symptoms.

Figure (1): Awareness of cancer warning signs and symptoms (N=328)



In addition, Socio-demographic variances in the knowledge score for signs and symptoms of cancer were identified by using ANOVA. Except for employment and educational level, the majority of demographic factors were not statistically significant to cancer awareness for its early signs and symptoms, as shown in Table 2. The level of awareness was significantly higher among females, thosewith advanced education, and those working in the medical field than among those from other fields.

Table 2: Analysis of variance showing respondents' demographic predictors of knowledge of cancer signs

Characteristics	Sample size	**Mean (95%confidenceinterval)**	**Analysis of** variance **(ANOVA)**
GENDER			
Male	**75**	**4.2 (3.6 – 4.8)**	**F= 37.4**

Female	**253**	**6.1 (5.8 – 6.4)**	**P= 0.000**
AGE			
18 -25	**87**	**5.8 (5.3 – 6.4)**	**F= 1.8**
26 – 45	**207**	**5.7 (5.4 – 6.1)**	**P= 0.1**
46 – 65	**31**	**5.3 (4.3 – 6.3)**	
More than 66	**3**	**2.6 (1.2 – 4.1)**	
EDUCATION			
No formal education	**4**	**4.2 (0.7 – 7.7)**	**F = 3.0**
Primary & secondary	**14**	**6.3 (5.0 – 7.7)**	**P = 0.02**
Graduate	**186**	**6.0 (5.6 – 6.3)**	
Post-graduate	**124**	5.2 (4.8 – 5.7)	
RESIDENCE AREA			
West of Libya	**278**	5.8 (5.5 – 6.1)	**F = 1.6**
East of Libya	**7**	5.5 (3.2 – 7.8)	**P = 0.1**
South of Libya	**20**	4.9 (3.7 – 6.0)	
Living abroad	**23**	5.0 (4.0 – 5.9)	
FIELD OF WORK			
Medical	**157**	6.7 (6.3 – 7.0)	**F = 50.7**
Non-medical	**171**	4.8 (4.4 – 5.2)	**P = 0.000**
INCOME			
No income	**77**	6.1 (5.6 – 6.6)	**F = 0.9**
Less than 500	**30**	5.5 (4.6 – 6.5)	**P = 0.4**
500 – 999	**100**	5.8 (5.3 – 6.3)	
1000 – 3000	**104**	5.4 (4.9 – 5.9)	
More than 3000	**17**	5.2 (3.6 – 6.9)	

Participant's attitude toward cancer awareness programs

Early detection and healthier behavior require cancer education programs. We investigated Libyans' perceptions of the significance of the cancer awareness program and their participation in it. As shown in Table 3, about (92.75%) of participants believe cancer awareness campaigns can help reduce disease incidence, and (96.6%) believe early detection can improve cancer outcomes. However, (76.2%) of Libyans believe that current cancer awareness programs are insufficient and only (29.3%) have previously attended or participated in a cancer awareness program, and (27.4%) have participated.

Table 2 Participant's attitude toward cancer awareness programs

	Yes N(%)	No N(%)
Have you attended any educational program about cancer?	173 (52.7%)	155 (47.3%)
Do you think that cancer awareness campaigns may contribute to reducing the incidence of the disease?	304 (92.7%)	24 (7.3%)
Do you think cancer awareness programs are insufficient in Libya?	250 (76.2%)	78 (23.8%)
Cancer is a preventable disease	226 (68.9%)	102(31.1%)
Early detection of cancer does not necessary means saving lives	172 (52.4%)	156 (47.6%)
Early detection of cancer can improves the cancer outcomes.	317 (96.6%)	11 (3.4%)
Certain vaccination can prevent development of certain cancers	188 (57.3%)	140 (42.7%)
Early detection of cancer may prevent up to 80 percent of tumor development	279 (85.1%)	49 (14.9%)
Have you done any early examination / or screening for cancer in the past?	90 (27.4%)	238 (72.6%)
have you / or one of your relative been diagnosed with cancer before?	153 (46.6%)	175 (53.4%)
Have you attended or participated in one of the cancer awareness programs previously?	96 (29.3%)	232 (70.7%)
Do you support and recommend cancer vaccination and / or screening programs?	302 (92.1%)	26 (7.9%)

Socio-demographic factors associated with cancer prevention and screening practices.

The association between socio-demographic factors with cancer prevention and screening practice was assessed using the chi-square test and the results are presented in Table 4. Being female is significantly associated with educational program attendance and taking

screening examinations. Older age groups practiced cancer screening more than younger ones. Moreover, being in the medical work field was significantly associated with attendance at educational programs, screening examinations, and participation in cancer awareness campaigns. However, monthly income was not associated with cancer prevention and screening practices, but according to the results, when the income increases, the screening practices increase.

Table 3 Socio-demographic factors associated with cancer prevention and screening practices.

Socio-demographic variables	Attended an educational programs about cancer			Previous screening for any kind of cancer			Participated in cancer awareness programs			Supported vaccination & screening programs		
	Yes %	No %	P value [a]	Yes %	No %	P value [a]	Yes %	No %	P value [a]	Yes %	No %	P value [a]
Gender			0.04			0.002			0.3			0.1
Male	42.7	57.3		13.3	86.7		25.3	74.7		88.0	12.0	
Female	55.7	44.3		31.6	68.4		30.4	69.6		93.3	6.7	
Age			0.4			0.000						
18-25	59.8	40.2		9.2	90.8		39.1	60.9	0.9	93.1	6.9	0.4
26-45	50.7	49.3		34.3	65.7		26.6	73.4		91.8	8.2	
46-65	48.4	51.6		32.3	67.7		19.4	80.6		93.5	6.5	
> 65	33.3	66.7		33.3	66.7		66.7	33.3		66.7	33.3	
Education			0.1			0.1			0.3			0.2
No formal education	100	0	25.0	75.0			50.0	50.0		75.0	25.0	
Primary & secondary	35.7	64.3	14.3	85.7			35.7	64.3		92.9	7.1	
Graduate	47.3	52.7	75.8	24.2			31.7	68.3		94.1	5.9	
Post-graduate	46.8	53.2	33.9	66.1			24.2	75.8		89.5	10.5	
Residence area			0.08			.000			0.5			0.1
West of Libya	52.5	47.5		23.0	77.0		29.1	70.9		92.8	7.2	
East of Libya	14.3	85.7		14.3	85.7		14.3	85.7		71.4	28.6	
South of	70.0	30.0		55.0	45.0		40.0	60.0		95.0	5.0	
	52.2	47.8		39.1	60.9		26.1	73.9		87.0	13.0	

Libya										
Living abroad										
Field of work			0.000			0.02			0.000			0.1
Medical	63.1	36.9		33.1	66.9		39.5	60.5		94.3	5.7	
Non-medical	43.3	56.7		22.2	77.8		19.9	80.1		90.1	9.9	
Income			0.2			0.1			0.6			0.5
No income	59.7	40.3		19.5	80.5		33.8	66.2		94.8	5.2	
Less than 500 LD	63.3	36.7		23.3	76.7		26.7	73.3		86.7	13.3	
500 – 999 LD	46.0	54.0		26.0	74.0		28.0	72.0		94.0	6.0	
1000 – 3000 LD	51.9	48.1		32.7	67.3		26.0	74.0		90.4	9.6	
> 3000 LD	47.1	52.9		47.1	52.9		41.2	58.8		88.2	11.8	

Discussion

Cancer identification at an early stage has the potential to drastically increase survival rates. The average 5-year survival rate at the early stage is 91%, while the average 5-year survival rate at the late stage is 26% [16]. Therefore, an early cancer diagnosis is essential for effective cancer treatment. Even though cancer frequently lacks obvious symptoms, there are several warning signs and symptoms that could help in the early diagnosis and eventual cancer cure. As an illustration, coughing up blood can indicate lung cancer, changes in bowel habits may indicate colon cancer, unexplained anemia or bruising may be related to leukemia, and a breast lump can be a sign of breast cancer [13], [17], [18].

This study assessed Libyan perceptions of cancer warning signs and symptoms and discovered that only 40.2% of participants remembered diarrhea and constipation as cancer warning symptoms, while 47% identified excessive bruising. Unusual lumps (86%), breast changes (81.4%), and unexplained weight loss (76.8%) were the most commonly identified by participants. Females also demonstrated superior knowledge to males. Similar to this study, the most frequently reported cancer symptom in the literature was an unexplained mass or lump, while changes in bowel habits were less frequently recognized [18],[20]. Elshami et al. (2020), for example, found that adolescents and adults in Gaza had a poor to fair understanding

of cancer signs and symptoms overall, and females outperformed males in terms of knowledge. The unusual lump was also the most commonly identified (77.2%), while the change in bowel habit was the least (23.2%) [20]. This can be a result of most people mistakenly believing that a lump is an indicator of cancer, and people typically associate a lump with anything abnormal and linguistically associated with a tumor or cancer.

However, only a small percentage of our participants were able to identify other cancer symptoms such as changes in bowel habits, cough of blood, and excessive bruising. These findings are comparable to respondents in China, India, the United Kingdom (UK), and Oman [21]–[23]. According to a study by the International Cancer Benchmarking Partnership, Australia, Canada, Denmark, Norway, Sweden, and the United Kingdom all have similar recognition rates for cancer symptoms [24]. Minority and poor people are often less likely to learn about cancer prevention and early detection due to a variety of causes. Aside from a lack of knowledge, inadequate educational levels and poverty lead to less opportunities[25].

Early recognition of cancer signs by educational intervention could significantly improve the quality of life and survival of cancer patients [25]. We observed a positive impact of the level of education and working fields on cancer awareness levels among the participants. Those with advanced education and those working in the medical field had significantly higher levels of awareness than those from other fields. Indeed, increasing knowledge and awareness of cancer symptoms and signs is critical to reducing the "patient interval," which is the time between the onset of symptoms and the presentation to a physician, which can result in the disease being in a more advanced stage when it is diagnosed.

Remarkably, most of our participants think that cancer awareness programs can lower disease occurrence and that early identification can stop the onset of cancer and improve its prognosis. Despite this, only a small percentage of people attended cancer education events. Only (29.3%) have attended or participated in a cancer awareness program in the past, and (27.4%) have sought a cancer screening. This can be due to inadequate awareness campaigns or a failure to publicize them through the appropriate channels. Participants, for instance, agreed in 76.2 % of cases that efforts to raise awareness of cancer are inadequate. It's noteworthy to see that 92.1% support and recommend cancer screening and/or vaccination programs.

We found that undergoing screening tests and participating in educational programs are strongly correlated with being a woman. It might not have been a surprise that women were typically better aware of the signs and symptoms

of cancer. According to studies [26], [27], women are better aware of the signs and symptoms of breast and colon cancer. In comparison to women, males typically underuse preventative health care services. It has been noted that in 2007, only 12% of women did not visit a doctor's office, or emergency room, or use home visits, compared to roughly 21% of adult men [28]. The underuse of health care by men puts them at a disadvantage and may be influenced by societal norms and the masculinity complex [29]. On the other hand, women are more likely to engage in cancer screenings, which may be due in part to the media. Women's malignancies receive a lot of attention in the media, but men's cancers receive far less publicity [30]. Furthermore, there are already many community awareness programs, public service announcements, and fundraisers for women's cancer issues, but there are no corresponding activities of similar magnitude and significance for men's health promotion [31]. According to the National Cancer Institute, funding for breast cancer research was roughly double that of funding for prostate cancer research in 2009 [31]. Therefore, it's crucial to emphasize the necessity of raising knowledge of and promoting men's health, particularly in terms of cancer prevention and detection.

In addition, the study revealed that also age had an impact on cancer screening practice. Cancer screening was more common in older age groups than in younger age groups. Furthermore, being in the medical area was substantially related to attendance at educational programs, screening tests, and participation in cancer awareness campaigns. This might be due to their work with cancer patients and teaching programs as part of their academic curriculum. This highlights the importance of educational intervention in cancer prevention and early detection.

In conclusion, the participated people are generally aware of the most frequent warning signs and symptoms of various types of cancer, and females outperform males in this regard. Females were more likely to have cancer screening tests and participate in educational programs than males. However, only a small proportion of the general population attended cancer education activities, the education and job experience have favorable effects on cancer awareness.

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