Perception and Knowledge toward Breast Cancer Prevention and Early Detection: A Comparison between Saudi and Sudanese

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Original Research Article

Abstract: The study undertaken the assessment of awareness and specific knowledge, perceived susceptibility, perceived seriousness of breast cancer and perceived benefits of screening for early detection and treatment of women in a differ community. The study also measured screening behavior among the participants. Therefore, the aim of this study was to assess and compare the knowledge and perception of Saudi Arabia and Sudanese people towards breast cancer prevention and early detection. In this comparative, cross sectional study, data about breast cancer were obtained from 1000 participants: 500 Saudi volunteers living in the city of Hail, Saudi Arabia and 500 Sudanese volunteers living in Khartoum city. The level of individual's knowledge about breast cancer was assessed, the majority of the study subjects were found with moderate knowledge followed by good, Excellent, poor and no knowledge representing 432(43.3%), 332(33.3%), 116(11.6%), 107(10.7%) and 10(1%), respectively. For Saudi, most of them were found with moderate knowledge followed by excellent, good, none and poor knowledge constituting 66(27.2%), 112(46.2%), 32(13.2%), 29(11.9%) and 3(1.2%), respectively. For Sudanese, most of them were found with moderate knowledge followed by Excellent, good, none and poor knowledge constituting 266(35.2%), 320(42.3%), 84(11.1%), 78(10.3%) and 7(0.9%), respectively. The overall knowledge of the studied population about breast cancer prevention and early detection was relatively low. More community based health education efforts are needed to reduce the burden of breast cancer in both nations.

Keywords: Breast cancer; Awareness, Saudi Arabia, Sudan, perception.

INTRODUCTION

Cancer is a heterogeneous mix of diseases. It has multiple causes, some of which are well understood and some of which are poorly understood. In addition, differences in the regional and temporal distribution of risk factors will determine the geographical and secular patterns of cancer. Availability of information about disease incidence and mortality, understanding of the underlying causes and how these can change, and know [1]. Breast cancer is cancer originating from breast tissue, the most common malignancy in women worldwide. It was estimated that 1,671,149 new cases of breast cancer were identified and 521,907 cases of deaths due to breast cancer happened in 2012 [2]. Although breast cancer incidence is lower in Sub-

Saharan African countries than in developed countries, African women are diagnosed at later stages of the disease and this is due to the lack of awareness by women, accessibility to screening methods, and availability of African-based research findings. Despite the fact that breast cancer has been reported to be the leading malignancy according to estimate data from GLOBOCAN, studies on breast cancer in Sudan have been limited. The reasons for this include the lack of population-based cancer registry as well as lack of research resources [3, 4]. So it was and to reduce the burden of this disease appropriate information about breast cancer and its' early detection measures are highly needed and this study was intended to assess the level of awareness, perception and screening behavior

towards breast cancer among women in KSA and Sudan and to determine the extent to which their perception of the seriousness and susceptibility to the disease may contribute to present situation of poor health seeking behavior [5]. Therefore, the aim of the present study was to assess and compare the knowledge and perception of Saudi Arabia and Sudanese people towards breast cancer prevention and early detection

MATERIALS AND METHODS

In this comparative study, data about breast cancer were obtained from 1000 volunteers whom 500 living in the city of Hail, Saudi Arabia and 500 living in Khartoum town, Sudan. Participants were randomly selected by simple random regardless to age, gender and educational level. A Purposeful questionnaire was designed and used for obtaining of the necessary data. The following information were obtained from each participant: age, sex, breast cancer may be inherited, hormonal exposure (Estrogen (RE)) increase the risk of

breast cancer, do you think that some food can prevent breast cancer, do you think that some food can cause breast cancer, don't food can prevent or cause breast cancer, know some food can prevent and cause breast cancer, early puberty and late menopause increase the risk of breast cancer, delayed and repeating child birth increase the risk of breast cancer, natural breast feeding decreases the risk of breast cancer, overweight or obesity increase the risk of breast cancer, cosmetics increase the risk of breast cancer, radiation exposure increases the risk of breast cancer, cigarette smoking and some viruses increase the risk of breast cancer.

RESULTS

This study investigated 1000 apparently healthy volunteers, their ages ranging from 14 to 52 years with a mean age of 23±5 years. Out of the 1000 participants, 242 (24.2%) were Saudi Arabia and 758 (75.8%) were Sudanese, giving Saudi Arabia Sudanese ratio of 1.00 to 3.1.

Table-1: Distribution of the study population by demographical characteristics

Variable	Category	Saudi	Sudanese	Total
Age	<20 years	16	152	168
	20-24	176	384	560
	25-29	35	102	137
	30-34	5	43	48
	35-39	8	36	44
	40+	2	40	42
	Total	242	757	999
Education	None	0	1	1
	Basic	4	65	69
	Secondary	12	47	59
	University	226	645	871
	Total	242	758	1000

The distribution of the study population showed that most of the participants were at age group 20-24 years followed by <20, representing 384/999(38.4%) and 152/999(15.2%), in this order. For Saudi Arabia the majority of participants were found in age range 20-24 years followed by 25-29, <20, 35-39, 30-34 and 40+years constituting 176/242(72.7%), 35/242(14.4%), 16/242(6.6%), 8/242(3.3%), 5/242

(2%), and 2/242 (0.8%), respectively. For Sudanese the majority of participants were found in age range 20-24 years followed by <20, 25-29, 30-34, 40+, and 35-39 years constituting 384/757(50.7%), 152/757(20%), 102/757(13.4%), 43/757(5.6%), 40/757(5.2%) and 36/757(4.7%), respectively as indicated in Table-1 & Fig-1.
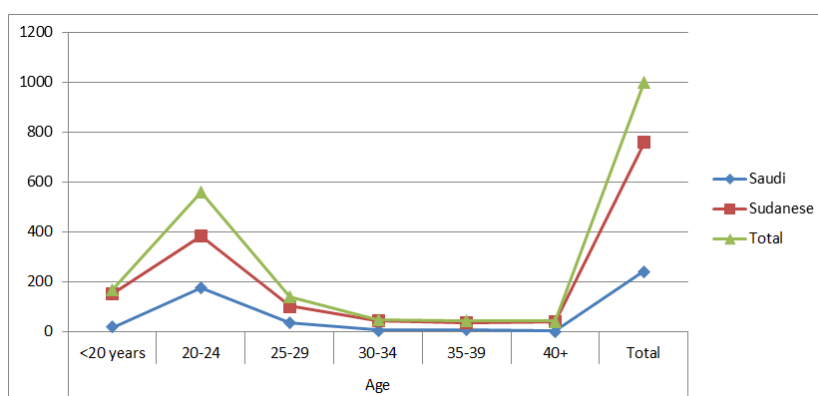
Fig-1: Description of the study population by demographical characteristics
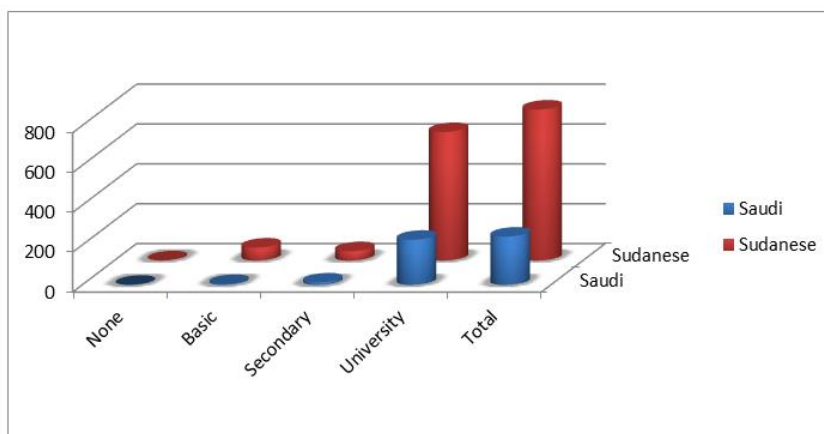
Fig-2: Description of the study population by educational levels

Table-2: Distribution of the study population by knowledge about breast cancer

| Variable	Category	SaudiArabia	Sudanese	Total
Level of individual's knowledge about breast cancer				
	None	29	78	107
	Poor	3	7	10
	Moderate	112	320	432
	Good	66	266	332
	Excellent	32	84	116
	Total	242	755	997
Level of Community knowledge about breast cancer				
	None	5	15	20
	Poor	79	139	217
	Moderate	49	178	227
	Good	56	169	225
	Excellent	34	202	236
	Total	223	703	925
Level of health services providers' knowledge about breast cancer				
	None	12	7	19
	Poor	48	77	125
	Moderate	63	178	241
	Good	51	216	267
	Excellent	36	201	237
	Total	210	671	809
Level of media's knowledge about breast cancer				
	None	13	10	23
	Poor	40	83	123
	Moderate	72	172	244
	Good	68	243	311
	Excellent	31	189	220
	Total	224	697	921
Level of efforts of breast cancer prevention in two nation's				
	None	8	34	42
	Poor	32	115	147
	Moderate	72	171	243
	Good	79	278	357
	Excellent	41	154	195
	Total	229	750	979

With regard to education level, the majority of the study subjects were with university level of education followed by basic, secondary and non-educate, representing 871/1000 (87.1%), 69/1000 (6.9%), 59/1000 (5.9%) and 1/1000 (0.1%) respectively. For Saudi Arabia, out of 242 respondents,

226 (93.3%) were at university level, 12 (4.9%) were at secondary level and 4(1.6%) were at basic level. For Sudanese, 645 (85%) were at university level, 65(8.5%) were at basic level, 47(6.2%) were at secondary level and 1(0.1%) were non-educated, as indicated in Table-1 & Fig-2.

Table-2 summarizes the distribution of the study population by knowledge about breast cancer. When the level of individual's knowledge about breast cancer was assessed, the majority of the study subjects were found with moderate knowledge followed by

good, Excellent, poor and no knowledge representing 432(43.3%), 332(33.3%), 116(11.6%), 107(10.7%) and 10(1%), respectively. For Saudi, most of them were found with moderate knowledge followed by good Excellent, none and poor knowledge constituting 112(46.2%), 66(27.2%), 32(13.2%), 29(11.9%) and 3(1.2%), respectively. For Sudanese, most of them were found with moderate knowledge followed by good, Excellent, none and poor knowledge constituting 320(42.3%), 266(35.2%), 84(11.1%), 78(10.3%) and 7(0.9%), respectively, as indicated in Table-2 & Fig-3.
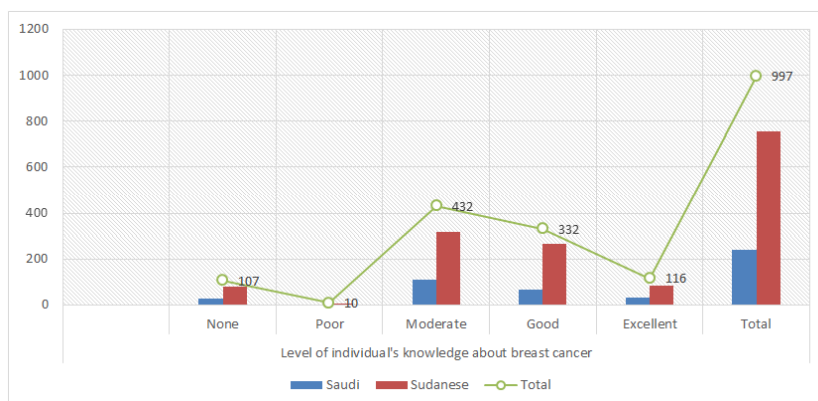
Fig-3: Description of the study population by the levels of individual's knowledge about breast cancer

With regard to the perception of the participants toward the level of community knowledge about breast cancer, 236(25.5%) have extant knowledge about breast cancer prevention and early detection, 227(24.5%) were with moderate, 225(24.3%) were with good level and 217(23.4%) were with poor knowledge about breast cancer prevention. For Saudi Arabia, most

of them were found with poor knowledge followed by good and moderate constituting 79(35.4%), 56(25%), 49(21.9%), 34(15.2%) and 5(2.2%), respectively. For Sudanese, most of them were found with excellent knowledge followed by moderate, good and poor constituting 202(28.7%), 178(25.3%), 169(24%) and 139(19.7) respectively, as indicated in Table-2 & Fig-4.
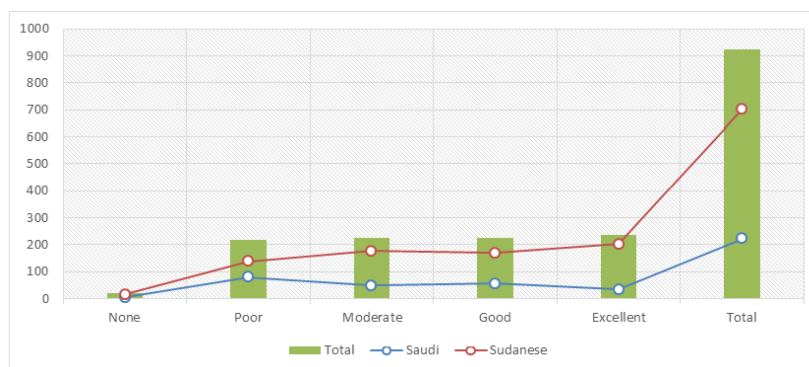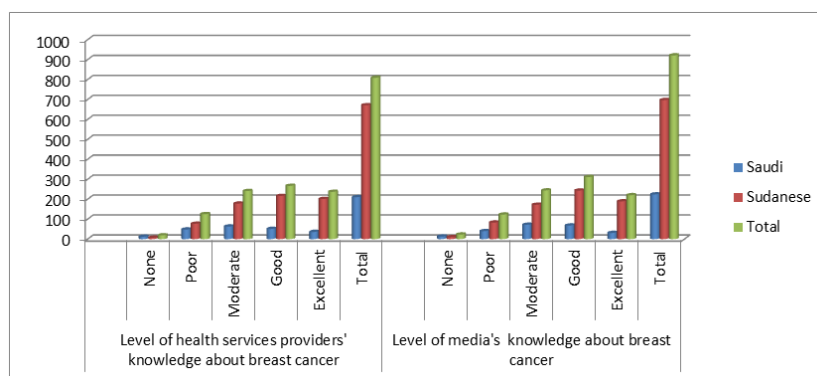

Fig-4: Level of Community knowledge about breast cancer

With regard to the perception of the participants toward the level of health services providers' contribution on awareness about breast cancer, 267(27.2%) think that health services providers have good knowledge about breast cancer prevention and early detection, 241(24.5%) were moderate, 237(24.1%) were excellent and 125(12.7%) were poor. For Saudi Arabia, 63(26.2%) were moderate, 60 (48%) were poor and 51(19.1%) were good. For Sudanese,

178(73.8%) were moderate, 216 (80.8%) were good and 201(84.8%) were excellent. The perception of the participants toward the level of media's contribution on awareness about breast cancer, 311 (33.7%) think that media have good contribution about breast cancer prevention and early detection, 244(26.4%) were moderate, and 220 (23.8%) were excellent. For Saudi volunteers, 72 (7.8%) were moderate, 68 (7.3%) were good and 40 (4.3%) were poor contribution. For

Sudanese, 243(26.3%) were good, 172 (18.6%) were moderate and (20.5%) were excellent, as indicated in

Table-2 & Fig-5.

Fig-5: Description of the study population by the levels of health service providers and media contribution on awareness about breast cancer prevention and early detection

With regard to the perception of the participants toward the level of efforts of breast cancer prevention in Saudi Arabia, and sudan the majority of participants think that there are good efforts, followed by moderate, excellent and poor, representing 357(36.4%), 243(24.8%), 195(19.9%) and 147(15%), in this order. For Saudi Arabia, the majority of them think that there are good prevention efforts followed by moderate, excellent and poor representing 79(8%), 72(7.3%), 41(4%) and 32(3.2%) respectively. For Sudanese the majority of them think that there are good efforts followed by moderate, excellent and poor constituting 278(28.3%), 171(70%) 154(15.7%) and 115(11.7%) in this order as described in Table-2.

Table-3: Distribution of the study population by knowledge about breast self-examination (BSE)

Variable	Category	Saudi	Sudanese	Total
Level of knowledge and perception about breast self-examination				
	None	28	75	103
	Poor	27	74	101
	Moderate	91	256	347
	Good	66	206	272
	Excellent	29	146	175
	Total	241	757	998
Do you think BSE has preventive role				
	Yes	211	672	883
	No	27	62	89
	Total	238	734	972
Knowledge of signs and lesions that you should consider when doing BSE				
	Yes	183	364	541
	No	79	226	225
	Total	162	390	766

On that, the majority of the participants were found with moderatelevel of knowledge and perception about breast self-examination (BSE) followed by good, excellent and poor representing, 347(34.7%), 272(27.2%), 175(17.5%) and 101(10%), respectively. For Saudi people, most of them indicated moderate followed by good, excellent, poor and none, representing 91(9.1%), 66(6.6%), 29(2.9%), 27(2.7%), and 28(2.8%), respectively. For Sudanese, most of them indicated moderate, good, excellent and poor constituting 256(25.6%), 206(20.6%), 146(14.6%) and 74(7.4%) respectively. However, 75(7.5%) of the females indicated complete absence of knowledge about BSE, as indicated in Table-3 & Fig-6.
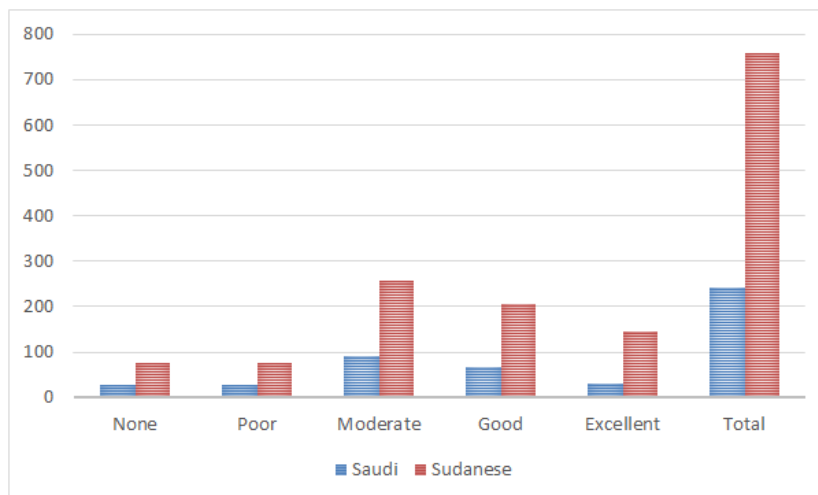
Fig-6: **Level of knowledge and perception about breast self-examination**

When asking the participants, whether BSE has preventive role, 883(88.7%) answered "yes" and the remaining 89 (8.9%) answered "no". Out of the 238 Saudi, 211(88%) stated "yes" and 27(11.3%) stated "no". Out of the 734 Sudanese, 672(67.5%) answered "yes" and 62(8.4%) stated "no", as indicated in Table-3 & Fig-7.
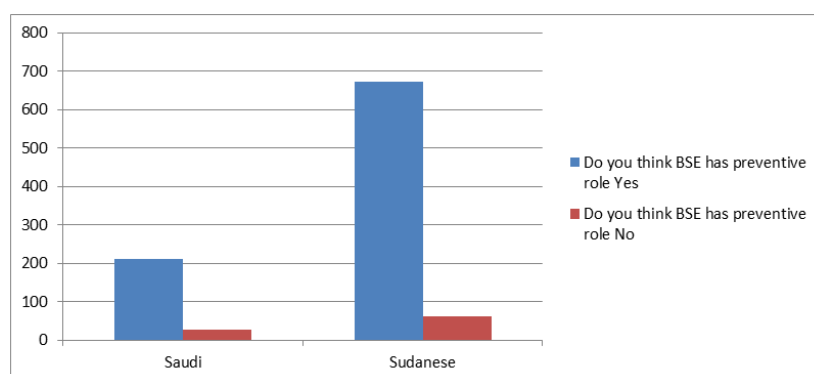
Fig-7: Show the BSE role in prevention of breast cancer

When asking the participants bout their knowledge of signs and lesions that you should consider when doing BSE, 346(63%) answered "yes" and the remaining 203 (37%) answered "no". Out of the 162 Saudi, 82(52%) stated "yes" and 79(48%) stated "no". Out of the 390 Sudanese, 264(68%) answered "yes" and 126(32%) answered "no", as indicated in Table-3.
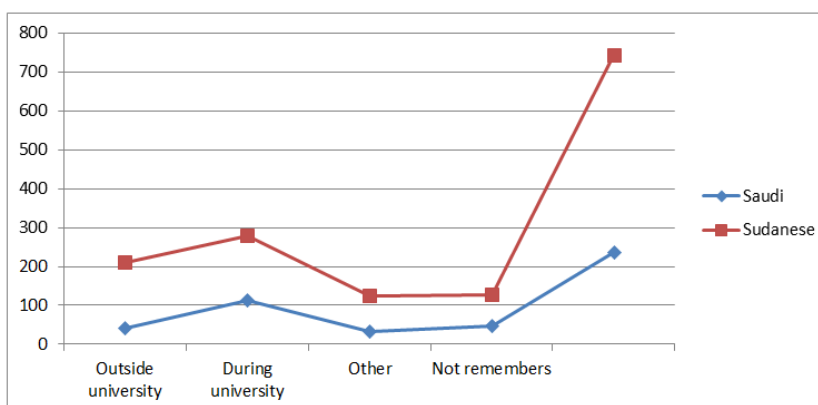
Fig-8: Distribution of the study population by source of knowledge about breast self-examination (BSE)

Table-4: Distribution of the study population by source of knowledge about breast self-examination (BSE)

Variable	Category	Saudi	Sudanese	Total
When you first learn about BSE				
	Outside university	40	209	249
	During university	112	278	390
	Other	34	123	157
	Not remembers	47	126	173
		236	744	980
The way you learn about BSE				
	University program	91	163	254
	Seminars	29	168	197
	Leaflet	29	79	108
	Media	70	223	293
	Friends	20	105	125
	Total	239	740	979
The method you prefer to do BSE				
	In front of mirror	50	282	332
	During shower	16	106	122
	On bed	21	56	77
	All	48	125	173
	Don't know	64	93	157
	Total	199	662	851

In respect to the preferred method to do BSE, most of them think that mirror is the best method followed by all methods, shower, and on bed constituting 332, 173, 122 and 77, respectively, while 157 person those don't know as indicated in Table-4 & Fig-8.
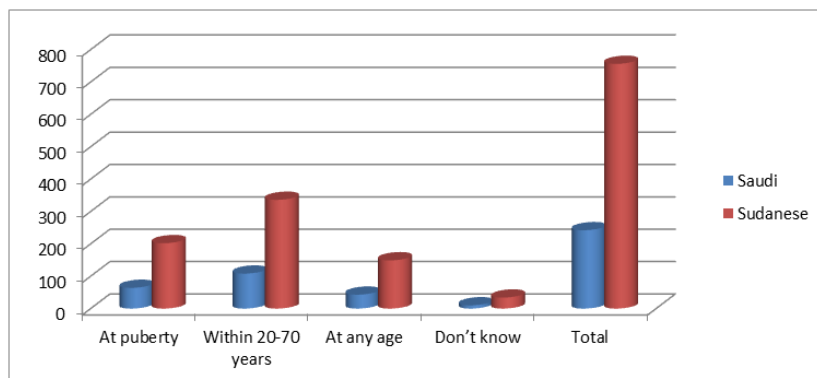
Table-5: Distribution of the study population by of knowledge of BSE timing

Variable	Category	Saudi	Sudanese	Total
When you start BSE				
	At puberty	64	202	266
	Within 20-70 years	108	336	444
	At any age	43	149	192
	Don't know	10	34	44
	Total	242	756	998
Ladies between 20-39 years should do breast clinical exam by physician				
	Monthly	23	109	132
	Annually	80	182	262
	Each 2 years	64	243	307
	Each 3 years	69	212	281
	Total	237	746	983
Women after 40 years should do breast clinical exam by physician				
	Monthly	39	135	174
	Annually	88	185	273
	Each 2 years	54	243	297
	Each 3 years	56	182	238
	Total	237	745	982
Women after 40 years should do mammogram				
	Monthly	30	113	143
	Annually	105	232	337
	Each 2 years	59	254	313
	Each 3 years	42	140	182
	Total	237	740	977
The suitable interval to do BSE				
	Monthly	52	256	308
	Each 6 months	45	101	146
	Annually	58	131	189
	Each 3 years	30	146	176
	Duration differ with age	53	117	170
	Total	238	752	990

Table-5 summarizes the distribution of the study population by knowledge of BSE timing. The majority of the participants believe that BSE must start within the age of 20 to 70 years followed by those indicated at puberty, and at any age representing 444(44.4%), 266(26.6%), and 192(19.2%). However, about 44(4.4%) were answered "don't know". Out of the 756 Sudanese, 336(33.6%), 202(20.2%) and 192(19%) have indicated within 20-70 years, at puberty, and at any time, correspondingly, Out of 242 Saudi, (%), that indicated within 20-70 years, as indicated in Table-5 & Fig-9.

Fig-9: Distribution of the study population by of knowledge of BSE starting time

With regard to the question " Ladies between 20-39 years should do breast clinical exam by physician", Out of 983 respondents, 307(31.2%), 281(28.5%), 262(26.6%) and 132(13.4%) answered, each 2 years, each 3 years, annually, and monthly, in this order. For Saudi, out of 237 respondents, 80(8.1%), 69(6.9%), 64(6.4%) and 23(2.3%), indicated annually, each 3 years & each 2 years and monthly respectively. For Sudanese, out of 746 respondents, 243(24.4%), 212(21.1%), 182(18.1%) and 109(11%), indicated each 2 years, each 3 years, annually and monthly respectively, as indicated in Table-5.

With regard to the question "Women after 40 years should do breast clinical exam by physician", Out of 982 respondents, 297(30.2%), 273(27.8%), 238(24.2%) and 174(17.7%) answered, each 2 years, annually, each 3 years and monthly in this order. For Saudi, out of 237 respondents, 88(8.6%), 56(5.7%), 54(5.6%) and 39(3.9%), indicated annually, each 3 years, each 2 years and monthly respectively. For Sudanese, out of 746 respondents, 243(24.7%), 185(18.8%), 182(18.5%) and 135(13.7%), indicated each 2 years, annually, each 3 years and monthly respectively, as indicated in Table 5.

With regard to the question "Women after 40 years should do mammogram", Out of 977 respondents, 337(34.4%), 313(32%), 182(18.6%) and 143(14.6%) answered, annually, each 2 years, each 3 years, and monthly, in this order. For Saudi, out of 237 respondents, 105(10.7%), 59(6%), 42(4.5%) and 30(3%), indicated annually, each 2 years, each 3 years and monthly respectively. For Sudanese, out of 740 respondents, 254(25.9%), 232(23.7%), 140(14%) and 113(11.4%), indicated each 2 years annually, each 3 years and monthly respectively, as indicated in Table-5.

With regard to the question "The suitable interval to do BSE ", Out of 990 respondents, 308(31.1%), 189(%) 176(17.7%), 170(17%), 158(15.9%) and 146(14.7%) answered, monthly, annually, each 3 years and each 6 months, in this order. For Saudi, out of 238 respondents, 58(5.8%), 53(5.3%), 52(5.2%), 45(4.6%) and 30(3%), indicated annually, duration differ with age, monthly, each 6months and each 3 years respectively. For Sudanese, out of 752 respondents, 256(25.8%), 146(17.7%), 117(11.8%), 131(13.2%) and 101(10%), indicated monthly, each 3 years, duration differ with age, annually and each 6 months, respectively, as in Table-5.

DISCUSSION

The study was undertaken to ascertain levels of awareness and specific knowledge, and perceived benefits of screening for early detection of breast tumor. Breast Cancer has been recognized as important reproductive health problem for women in both developed and developing countries [16]. Breast cancer accounts for about 46% of the cancer burden in very high and high, 29% in medium, and 9% in low regions. Specifically, age-standardized incidence of breast cancer ranged from 78 in high developed to 26.5 in medium-developed regions (per 100,000 women) [7]. In the present study, we aimed at assessing the knowledge and perception of Northern Saudi Arabia and Sudanese people towards breast cancer prevention and early detection. As breast cancer is a female's concern, the great majority of participants in this study were females. However, a little number of males' participants was considered since breast cancer can affect men, as well as, males can help in the prevention efforts. The majority of participants were from university students, which may render the expected findings more positive than, if the sample was taken from community basis only.

About 1,671,149 new cases of breast cancer were identified and 521,907 cases of deaths due to breast cancer happened in 2012 and the National policies and programs should be employed to increase awareness, to reduce exposure to cancer risk factors and to ensure that people are provided with the sufficient knowledge and support they need to implement healthy lifestyles [2, 8].

With regard to the level of individual's knowledge about breast cancer, the majority of the study subjects were found with moderate knowledge 43.3%, For Saudi, most of them were found with moderate knowledge followed by good Excellent, none and poor knowledge constituting 112(46.2%), 66(27.2%), 32(13.2%), 29(11.9%) and 3(1.2%), respectively. And for Sudanese, 33.2%, 11.6% and 11.4% were found with good, excellent and poor knowledge, respectively. These values may be high for university educated persons. The assessment of knowledge level was based on asking the participant random questions about breast cancer risk factors, as well as, lifestyle incriminating factors.

With regard to the perception of the participants toward the level of community knowledge about breast cancer, about 25.5% have excellent knowledge about breast cancer prevention and early detection. For Saudi, most of them were found with poor knowledge followed by good and moderate constituting 79(35.4%), 56(25%), 49(21.9%), 34(15.2%) and 5(2.2%), respectively. For Sudanese, also most of them were found with excellent knowledge followed by moderate and good constituting 21.8%, 24.5% and 24.3%, respectively. These factors were assessed in view of the participants toward the efforts of community in educating females about breast cancer prevention in Sudan and Northern Saudi Arabia.

With regard to the perception of the participants toward the level of health services providers' contribution on awareness about breast cancer, most participants believe that health services providers in Northern Saudi Arabia and central sudan region deliver good efforts towards breast cancer control. However, in a situation where there is no established national screening program for breast cancer, it is inapplicable to assess the knowledge of breast cancer and its early detected measures. Therefore propose that lack of knowledge of correct information about breast cancer exists in the community [9].

With regard to the perception of the participants toward the level of media's contribution on awareness about breast cancer, 31.1% think that media have good contribution towards breast cancer prevention and early detection. The power of media can't be denied anywhere in the world. Breast cancer requires more and more awareness to be prevailed among the people and especially the women living in remote areas. Media can be used to make people aware about the breast cancer risk factors, and play a very important role in dispelling many myths and misconceptions about the disease [10, 11].

With regard to the perception of the participants toward the level of efforts of breast cancer prevention in nation the majority of participants think that there are moderate efforts. Breast cancer is reported from developed and Western countries, while data on relevant reports from Saudi Arabia appears either scattered, or not brought to the public interest and this indicated the lack of such efforts or it's presented in narrow band delivered by non-governmental organizations [5].

Luckily, the majority of the participants were found with moderate level of knowledge and perception about BSE. In regions where there is low utilization of mammography screening, BSE proves to be an easy and cost-effective method that has an important part to play in the early detection of breast cancer. Failure to practice BSE has been associated with delay in presentation, and thereafter with poor long-term survival [1, 4]. Several studies conducted in different regions of Saudi Arabia have explored female knowledge and attitude towards breast cancer and BSE [12].

In regard to the preferred method to do BSE, most of them think that mirror are the best method. Standing before a mirror and compare the breasts for differences in size, nipple inversion, bulging, or dimpling is best way for BSE. Despite increased use of screening mammography, a large percentage of breast cancers are detected by the patients themselves. Patient-noted breast abnormalities should be carefully evaluated [13].

The majority of the participants believe that BSE must start within the age of 20 to 70 years. However, BSE is an option for women starting in their 20s [14]. With regard to the question "Thesuitable interval to do BSE", Out of 1000 respondents, 444(44.4%), answered, monthly.

With regard to the question "Womenafter 40 years should do breast clinical exam by physician", in 30.2%, 27.8%, and 24.2% answered, each 2 years, annually and each 3 years in this order the Physical examination of the breast is not a single test clinical breast examination (CBE), it has various degrees of accuracy, depending on the clinician and his or her technique [15]. Women in their 20s and 30s should have a CBE as part of a periodic health examination by health professionals preferably every 3 years and after the age of 40, women should have a CBE every year, as recommended by the American Cancer Society [16].

With regard to the question "Women after 40 years should do mammogram**"**, Out of 1000 respondents, 33.7%, 31.3%, and 18.2% answered, annually, each 2 years, and each 3 years, in this order, there a mammography, CBE and BSE are the secondary preventive methods used for screening in the early detection of breast cancer [17]. The mammography is the most valuable tool for detecting breast cancer in the earliest stages, before the cancer has metastasized. The decline in breast cancer mortality has been largely attributed to regular mammography screening practice. The ACS recommends that women aged 40 and over should have a screening mammogram every year and should continue to do so for as long as they are in good health [16, 18].

CONCLUSION

The overall knowledge of the studied population about breast cancer prevention and early detection was relatively low. More community based health education efforts are needed to reduce the burden of breast cancer in both nations.

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