

## Original Research Article

# Knowledge, Attitude and Practice of Osteoporosis among Adult Patients in Bashair Hospital, Sudan, 2021

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Received: 02.03.2022

Accepted: 10.04.2022

Published: 18.05.2022

**Journal homepage:**<https://www.easpublisher.com>**Quick Response Code**

**Abstract:** Osteoporosis is a skeletal disorder distinguished by micro architectural deterioration and rapid bone loss at the osseous tissue, increasing the risk for bone fracture especially at the hip, wrist, and spine. Knowledge, Attitude and Practices (KAP) is a quantitative method that provides access to quantitative and qualitative information. The study aimed to assess the level of Knowledge, Attitude and Practice regarding Osteoporosis among adult patients in Bashair University Hospital 2021. **Methodology:** This was descriptive cross-sectional hospital-based study conducted in Bashair Hospital 2021. 200 participants were chosen. Data were collected using designed interview questionnaire. Statistical package for social sciences version 26 used for analysis. **Results:** (53.5%) of participants were females. (33.0%) of participants their level of educational is basic school. (45.2%) of the participants had poor knowledge, (40%) of the participants had poor attitude, and (54%) of the participants had moderate practice about Osteoporosis among adult patients. There was a significant relation between age groups and level of educational regarding Knowledge, Attitude and Practice ( $p \leq .001$ ). There was a significant relation between Knowledge and Attitude ( $P < .001$ ) and Knowledge and Practice ( $P < .001$ ). **Conclusion:** The study concluded that adult patients had poor knowledge, attitude and moderate practice regarding Osteoporosis. Factors such as age, level of educational and gender were significantly influence the level of knowledge, attitude and practice. **Recommendation:** Upraise the level of awareness; establish screening programs for community population especially in low socioeconomic areas, regular investigations and at least once for bone scanning regarding Osteoporosis.

**Keywords:** Osteoporosis, bone fracture, knowledge, Attitude and Practice.

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## 1. INTRODUCTION

Osteoporosis is a skeletal disorder distinguished by micro architectural deterioration and rapid bone loss at the osseous tissue, increasing the risk for bone fracture especially at the hip, wrist, and spine [1]. It is often referred to as a silent killer because there are no apparent early symptoms [2]. It is a serious metabolic bone disorder that causes >8.9 million fractures per year affecting approximately 200 million globally [3]. It is a threat to the well-being of the human population where its related morbidity and mortality increase proportionally as the population ages [4]. World Health Organization (WHO) defines osteoporosis as a disease “characterized by low bone mass and micro-architectural deterioration of bone tissue, leading to enhanced bone fragility and a consequent increase in fracture risk. It is one of the most common metabolic diseases and it manifests itself only after sufficient damage has been done [5].

Osteoporosis represents a major public health problem through its association with fragility fractures. All osteoporotic fractures increase patient morbidity; however, fractures of the hip and vertebrae are also linked with significant mortality. The public health burden of osteoporotic fracture is likely to rise in future generations, due in part to an increase in life expectancy [6].

The awareness toward osteoporosis and the risk of getting fracture among public or medical sector in Sudan had increased due to the Sudanese Osteoporosis Society efforts.

On the other hand, osteoporosis is the most common metabolic bone disease in the United States and can result in devastating physical, psychosocial, and economic consequences [7]. Osteoporosis is not only restricted to bringing acute pain, it can cause serious medical complications and affect the quality of

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life of a person [8]. Many studies reported that women have higher tendency in getting osteoporosis than men because of a decrease in estrogen after menopause, leading to rapid progression of bone loss [9]. Caucasians and Asians are categorized in the high-risk groups of getting osteoporosis [10]. However, there are many other risk factors associated with osteoporosis, such as gender, race, body mass index, genetics, diet, physical activity, and family history [11]. Prevention is better than cure; therefore, the Sudanese population should take care of all these risk factors that can contribute to osteoporosis [12].

The purpose of the present study is to assess the level of knowledge, attitude and practice (KAP) regarding osteoporosis.

Knowledge is a familiarity with someone or something, which can include facts, information, descriptions, or skills acquired through experience or education [13].

Attitude is an expression of favor or disfavor toward a person, place, thing, or event, attitude may refer to the distinct concept of mood[14].

Practice is the act of rehearsing a behavior over and over, or engaging in an activity again and again, for the purpose of improving or mastering it [15].

Knowledge, Attitude and Practices (KAP) is a quantitative method (predefined questions formatted in standardized questionnaires) that provides access to quantitative and qualitative information.

KAP surveys reveal misconceptions or misunderstandings that may represent obstacles to the activities that we would like to implement and potential barriers to behavior change. Note that a KAP survey essentially records an “opinion” and is based on the “declarative” (i.e., statements). In other words, the KAP survey reveals what was said, but there may be considerable gaps between what is said and what is done[16].

### 1.2. Problem Statement

Osteoporosis is the most common metabolic bone disease and can result in devastating physical, psychosocial and economic consequences. The morbid event in Osteoporosis is fracture.

The entire population is at risk of osteoporosis at any age but elderly and post-menopausal are more susceptible to development of this disease [17].

Osteoporosis remain public health concerns and lead to bone fractures, which can lead to disability and burden on those who are afflicted [18].

There is evidence suggesting that knowledge about Osteoporosis is a contributor to Osteoporosis preventive behavior, although this is not a clear-cut relationship worldwide. To promote knowledge and better health seeking behavior among adults, it is necessary to assess their current state of awareness and work towards reducing the identified gaps in knowledge.

However, increases awareness of the Osteoporosis and Osteoporotic fracture risk among adults will be contributed in the formation strategy for prevention and control risk of fracture and improves the quality of life [19].

### 1.3. Justification (Rationale)

Osteoporosis is a serious problem worldwide, using meta-analysis, the prevalence of Osteoporosis in the world was reported to be 18.3 (95% CI 16.2–20.7). The prevalence of Osteoporosis in women of the world was found to be 23.1 (95% CI 19.8–26.9) reported among women, while the prevalence of osteoporosis among men of the world was found to be 11.7 (95% CI 9.6–14.1). whereas, The highest prevalence of osteoporosis was reported in Africa with 39.5% (95% CI 22.3–59.7) [20].

Despite there are previous studies conducted worldwide, there is a lack of studies on an institution-based study in Sudan.

Increase KAP in adults plays important role in preventing Osteoporosis. Understanding of KAP in men and women who are at high risk for a fracture will provide important information towards understanding its burden on the national health systems.

### 1.4. Objectives

#### General Objectives

To assess the knowledge, attitude and practice of osteoporosis among adult patients at Bashair University Hospital 2021

#### Specific Objectives

- To determine the knowledge of adult patients about osteoporosis.
- To determine the attitude of adult patients about osteoporosis.
- To determine the practice of adult patients about osteoporosis.
- To identify relation between (KAP) and demographic data.

## 2. METHODOLOGY

### 2.1. Study Design

Descriptive cross-sectional hospital-based study among adult patients at Bashair Hospital (2021)

**2.2. Study Area**

Bashair University Hospital is a teaching hospital located in South of Khartoum State/ Sudan. Subjected to Al-Neelain University established 2003. Surround by marginalized area determined as low socioeconomic status. The hospital composed of Pediatric, Obse & Gyne, Surgery, Dialysis, Dentistry, Physiotherapy, Neuro medicine and orthopedic clinic departments. The other facilities are Laboratory, Pharmacy, Refer clinics, Blood bank, Wards, Operation rooms and administrative offices. The staff consists of Consultants, Specialists, Registrars, Medical officers, Anesthetists, Nurses, Nutritionists and administrative staffs including security and clean workers. The hospital receives about 300-600cases a day and the patient is initially examined, diagnosed and referred to the wards or discharge.

**3.3. Study Population**

The target population was selected from adult patients at Bashair University Hospital (Inpatients and outpatients).

**3.4. Sample Size**

A total of 200 populations were determined as participants.

**3.5. Sampling Technique**

Convenience sampling technique has been used.

**3.6. Data Collection Technique**

Questionnaire was carefully prepared, tested and directed to obtain data regarding osteoporosis among adult patients at Bashair University Hospital 2021.

**3.7. Data Analysis**

A statistical package for social sciences (SPSS) version 26 was been used to analyze the data. ANOVA test between age group, level of education, and gender towards KAP domains about osteoporosis among the adult patients, p-value considered significant at less than 0.05 level.

**3.8. Ethical Considerations**

Ethical clearance was obtained from the State Ministry of Health, Department of Epidemiology / University of Bahri. The objective of the study was explained to participants, privacy and confidentiality of collected information was ensured at all level.

**3. RESULTS**

**Table-1: Characteristics of age, gender and education N=200**

Age/year	Frequency	%
22 – 34	70	36.0
35 – 44	55	27.5
45- 64	51	25.5
≥ 65	24	12.0
Total	200	100.0
<b>Gender</b>		
Male	93	46.5
Female	107	53.5
Total	200	100.0
<b>Level of Education</b>		
Illiteracy	27	13.5
Khalwah	15	7.5
Basic School	66	33.0
secondary School	57	28.5
University	33	16.0
Higher education	2	1.0
Total	200	100.0

Table (1) Characteristics of participants according to the age and gender

Table (1) shows that (36.0.0%) of the Participant's age between (22-34 years) old. (53.5%) of

the participants were females. (33.0%) of participants their level of education is basic school.

**Table-2: Distribution of the classification of bone problem (N=200)**

Classification	Frequency	Percentage
NA	19	9.5%
Osteoarthritis	15	7.5%
lower back pain	26	13.0%
Upper & limb fractures	78	39.0%
lower limb deformity	3	1.5%
Upper & lower limb pain	45	22.5%
Others	14	7.0%
Total	200	100.0%

Table (2) Distribution of participants according to the classification of bone problem

Table (2) represents that the participants most bone problem is upper and lower limb fractures complained from different type of bone problems. The 39.0%

**Table-3: Knowledge towards osteoporosis among participants (N= 200)**

NO.	Items	Yes	No
	knowledge about Osteoporosis	125 (62.5%)	75 (37.5%)
	Family history is a risk to the development to Osteoporosis	36 (18.0%)	164 (82.0%)
	Old age at a risk to develop Osteoporosis	119 (59.5%)	81(40.5%)
	Importance of Regular physical activity	140 (70.0%)	60 (30.0%)
	Female at risk to develop Osteoporosis	104 (52.0%)	96 (48.0%)
	Importance of drinking milk	124 (62.0%)	76 (38.0%)
	Less sun exposure leading to Osteoporosis	101 (50.5%)	99 (49.5%)
	No signs and symptoms of Osteoporosis during the early phases	60 (30.0%)	140 (70.0%)
	Osteoporosis increases the risk of having fractures	117 (58.5%)	83 (41.5%)
	Previous fracture is Osteoporosis risk factor	112 (56.0%)	88 (44.0%)
	Osteoporosis leading to loss of Height	46 (23.0%)	154 (77.0%)
	Cigarette smoking is Osteoporosis risk factor	79 (39.5%)	121 (60.5%)

Table (3) knowledge towards Osteoporosis among participants

Table (3) shows the knowledge among adult patients towards Osteoporosis. 62.5% of the participants know and hear about Osteoporosis, while 82.0 % do not know that family history play role in the development of Osteoporosis. (59.5%) of the participants know that old age is one of the risk factors for the development of Osteoporosis. In addition, (70.0%) of the participants know that regular physical activity strengthening bone and prevent Osteoporosis. (52.0%) of the participants had knowledge about that female are more prone to have Osteoporosis. (62.0%) of the participants said that drinking milk can prevent Osteoporosis. Moreover, (50.5%) of the participants

know that less sun exposure can lead to Osteoporosis. Whereas, (46.5%) of the participants know that Osteoporosis has no signs and symptoms during the early phases of the health condition. (58.5%) of the participants know that Osteoporosis increases the risk of having fractures. Furthermore, (56.0%) of the participants reported that previous fracture is Osteoporosis risk factor. While, regarding loss of height which may cause by Osteoporosis (52.5%) of the participants have no knowledge. (60.5%) of the participants has no knowledge that smoking cigarette is Osteoporosis risk factor.

**Table-4: Attitude towards osteoporosis among participants (N= 200)**

NO.	Items	Yes	No
	Concern of having osteoporosis	70 (35.0%)	130 (65.0%)
	Prevent the probability of having Osteoporosis	94 (47.0%)	106 (53.0%)
	Thought and fear of having osteoporosis	54 (27.0%)	146 (73.0%)
	Source of calcium intake (eggs and milk)in protection against osteoporosis	154 (77.0%)	46 (23.0%)
	Regular exercise prevent problem of osteoporosis	157 (78.5%)	43 (21.5%)
	Undergo required investigations and consult a physician for osteoporosis	53 (26.5%)	147 (73.5%)
	Aware of the risk of osteoporosis	18 (9.0%)	182 (91.0%)
	look for/read about osteoporosis	75 (37.5%)	125 (62.5%)

Table (4) Attitude towards osteoporosis among participants

Table (4) Shows that (65.0%) of the participants were not concern of having osteoporosis in a point of their life. (53.0%) of the participants have no attitudes towards Osteoporosis prevention. Whereas (73.0%) of the participants have no thoughts or fear of having Osteoporosis.

Majority of the participants (77.0%) think that source of calcium intake (eggs and milk) could protect

against Osteoporosis. (78.5%) of the participants said regular exercises can prevent problems of Osteoporosis. In addition, (73.5 %) of the participants were not undergo required investigations and consult a physician for osteoporosis. (91.0 %) of the participants were not aware about the risks of Osteoporosis. Finally, (62.5%) of the participants were not look for/read about Osteoporosis.

**Table-5: Practice towards Osteoporosis among Participants (N= 200)**

NO.	Items	Daily	Frequently	Sometimes	Rarely	Never
	Exposing to sun (before 10 a.m.)	94 (47.0%)	58 (29.0%)	37 (18.5%)	11 (5.5%)	0
	Performing physical exercises / physical Activities	8 (4.0%)	29 (14.5%)	112 (56.0%)	43 (21.5%)	8 (4.0%)
	Drinking soft drinks	7 (3.5%)	5 (2.5%)	49 (24.5%)	78 (39.0%)	61 (30.5%)
	Eating food rich of calcium and vitamins (eggs, milk, fruits &vegetables)	16 (8.0%)	49 (24.5%)	124 (62.0%)	10 (5.0%)	1 (0.5%)
	Measurement of vitamin D in the blood	0	0	1 (0.5%)	7 (3.5%)	192 (96.0%)
	Measurement of blood calcium	0	0	0	7 (3.5%)	193 (96.5%)
	Active lifestyle	34 (17.0%)	83 (41.5%)	67 (33.5%)	14 (7.0%)	2 (1.0%)
	Attend educational Programs/campaigns about osteoporosis	0	4 (2.0%)	34 (17.0%)	50 (25.0%)	112 (56.0%)

Table (5) shows that 47.0% of the participants exposing to sun (before 10 a.m.) daily. 56.0% of participants were performing physical exercises / physical Activities sometimes. 39.0% of the participants drank milk rarely. 62.0% of participants were eats food rich of calcium and vitamins (eggs, milk,

fruits & vegetables) sometimes. Most of participants never measured vitamin D, Calcium level in their blood or attended educational programs (96.0%, 96.5% and 56.0%) respectively. Only (41.5%) of the participants frequently has active lifestyle.

**Table-6: t- test between gender and KAP domains towards osteoporosis among participants (N= 200)**

Variables	Gender	Mean	Std. Deviation	Sig.
Knowledge score	Male	5.30	3.485	.480
	Female	5.65	3.472	
Attitude score	Male	18.69	4.750	<.001
	Female	21.79	5.708	
Practice score	Male	21.61	2.558	.500
	Female	21.87	2.771	

Table (6) shows that there is no a statistically significant difference between gender regarding knowledge as determined by one-way ANOVA (p = .970). There is a statistically significant difference

between gender regarding attitude as determined by one-way ANOVA <.001. There is no a significant difference between gender regarding Practice as determined by one-way ANOVA (p =.500).

**Table-7: ANOVA test between age group and KAP domains towards osteoporosis among participants (N= 200)**

Variables		Mean	Std. Deviation	95% Confidence Interval for Mean		Sig.
				Lower Bound	Upper Bound	
Knowledge score	22 – 34 years	6.29	3.130	5.54	7.04	<.001
	35 – 44 years	6.93	2.748	6.18	7.67	
	45- 64 years	4.18	3.643	3.15	5.20	
	≥ 65 years	2.67	3.060	1.37	3.96	
	Total	5.49	3.474	5.00	5.97	
Attitude score	22 – 34 years	20.83	5.280	19.57	22.09	.015
	35 – 44 years	21.73	5.752	20.17	23.28	
	45- 64 years	19.33	5.764	17.71	20.95	
	≥ 65 years	17.96	3.770	16.37	19.55	
	Total	20.35	5.495	19.58	21.12	
Practice score	22 – 34 years	22.17	2.869	21.49	22.86	<.001
	35 – 44 years	22.67	2.261	22.06	23.28	
	45- 64 years	21.18	2.066	20.60	21.76	
	≥ 65 years	19.63	2.779	18.45	20.80	
	Total	21.75	2.671	21.38	22.12	

Table (7) shows that there is a significant difference between ages regarding Knowledge as determined by one-way ANOVA ( $p < .001$ ). There is no significant difference between ages regarding attitude as

determined by one-way ANOVA ( $p = .010$ ). There is a significant difference between ages regarding practice as determined by one-way ANOVA ( $p < .001$ ).

**Table-8: ANOVA test between level of education and KAP domains (N= 200)**

Variables		Mean	Std. Deviation	95% Confidence Interval for Mean		Sig.
				Lower Bound	Upper Bound	
Knowledge score	Illiteracy	1.59	2.818	.48	2.71	<.001
	Khalwah	3.87	3.482	1.94	5.79	
	Basic School	4.15	2.983	3.42	4.88	
	secondary School	7.48	2.115	6.92	8.05	
	University	8.58	1.501	8.04	9.11	
	Higher education	7.50	2.121	-11.56	26.56	
	Total	5.49	3.474	5.00	5.97	
Attitude score	Illiteracy	17.85	4.580	16.04	19.66	<.001
	Khalwah	17.27	4.891	14.56	19.98	
	Basic School	18.24	5.159	16.97	19.51	
	secondary School	22.72	5.318	21.31	24.13	
	University	23.76	3.800	22.41	25.10	
	Higher education	23.00	5.657	-27.82	73.82	
	Total	20.35	5.495	19.58	21.12	
Practice score Variables	Illiteracy	20.63	2.498	19.64	21.62	<.001
	Khalwah	20.13	2.295	18.86	21.40	
	Basic School	21.02	2.187	20.48	21.55	
	secondary School	22.33	2.149	21.76	22.90	
	University	23.79	3.039	22.71	24.87	
	Higher education	23.00	7.071	-40.53	86.53	
	Total	21.75	2.671	21.38	22.12	

Table (8) ANOVA test between level of educational and KAP domains towards Osteoporosis among participants

Table (8) shows that there is a statistically significant difference between level of education regarding Knowledge, Attitude and Practice as determined by one-way ANOVA ( $p = < .001$ ).

**Table-9: Correlation between KAP domains (N= 200)**

Spearman Correlation	rho	Sig.
Knowledge* Attitude	-.366	<.001
Knowledge* Practice	-.322	<.001
Attitude* Practice	.161	.022

Table (9): Correlation between KAP domains towards Osteoporosis among participants

Table (9) shows that there is inverse moderate correlation between Knowledge and Attitude ( $\rho = -.366$ ) and it is statically significant ( $P = < .001$ ). There is inverse moderate correlation between Knowledge and Practice ( $\rho = -.322$ ) and it is statically significant ( $P = < .001$ ). There is weak correlation between practice and attitude ( $\rho = .161$ ) and it is not statically significant ( $P = 0.022$ )

**The score was divided into three parts**  
**Less than 90 = poor, 60- 89 = moderate, equal or more than 60 = good**

#### 4. DISCUSSION

(36.0.0%) of the participant's age were between (22-34 years) (Table 1). (Table 1) 53.5% of the participants were female. The study done by (20) result agree that Osteoporosis in women of the world was found to be 23.1 (95% CI 19.8–26.9) more than men, also (21) reported that prevalent of Osteoporosis among women more than among men. Another study reported that women have higher tendency in getting osteoporosis than men because of a decrease in estrogen after menopause, leading to rapid progression of bone loss [10]. (33.0%) of the participants their level of education is basic school (Table 1). The study area was marginalized with low socioeconomic status, and most of the people were poor and not well educated. The participants complained from different type of bone problems. The most bone problem is upper and lower limb fractures 39.5%. This due to that most of the respondents were younger and at the beginning of their bone problems (Table 2).

62.5% of the participants were knew and heard about Osteoporosis (Table 3) this seems to be similar to study among rural Turkish women [22] and consistent with another study in Khartoum which showed that the majority of respondents heard about Osteoporosis [23].

Regarding Family history as risk factors for Osteoporosis, Osteoporosis can lead to loss of height and smoking cigarette as risk factors, the participants have poor knowledge 82.0%, 77.0 %, and 60.5% respectively (Table 3). Whereas others risk factors, old age, physical activity, being a female, diet, sun exposure and previous fracture showed moderate knowledge, (59.5%), (70.0%), (52.0%), (62.0%), (50.5%), (56.0%), respectively (Table.3). The participants in the current study have low score of overall knowledge.

In contrast with most other studies as in [24], in [25] and in Malaysia [2] which disagree with the current study and show high to moderate scores in knowledge. This may be due to differences on level of participants' education and socioeconomic status.

Regarding attitude (65.0%) of the participants has no attitude towards having osteoporosis in a point of their life. (53.0%) of the participants has no attitude towards Osteoporosis prevention.

(73.0%) of the participants have no thoughts or fear of having Osteoporosis. Whereas (77.0%) of the participants think that source of calcium intake (eggs and milk) could protect against Osteoporosis. This result agree with [26] study which has similar results.

(78.5%) of the participants said regular exercises can prevent problems of Osteoporosis. Similar findings were observed among study conducted in Riyadh [27].

In addition, (73.5 %) of the participants were not undergo required investigations and consult a physician for Osteoporosis. This result agrees with study done by (28) which showed high score of attitude towards investigation and consults. This is may be due to increases of the cost of physician consultations and investigations and the knowledge of the participants about the risks of Osteoporosis.

(91.0 %) of the participants have no aware about the risks of Osteoporosis. Finally, (62.5%) of the participants were not look for/read about Osteoporosis (Table 4). The participants in the current study have low score of overall attitude.

Regarding practice 47.0% of the participants exposing to sun (before 10 a.m.) daily. 56.0% of participants were performing physical exercises / physical Activities sometimes. This result agree with study (29) whereas disagree with (30) which reported that the young people do not reach the adequate physical level.

62.0% of participants were eats food rich of calcium and vitamins (eggs, milk, fruits & vegetables) sometimes. Unfortunately, most of participants never

measured vitamin D, Calcium level in their blood or attended educational programs (96.0%, 96.5% and 56.0%) respectively. Only (41.5%) of the participants frequently has active lifestyle (Table 5). The participants in the current study have moderate score of overall practice.

Regarding t- test between gender and KAP domains towards osteoporosis among participants, there is no a statistically significant difference between gender regarding knowledge as determined by one-way ANOVA ( $p = .970$ ). There is a statistically significant difference between gender regarding attitude as determined by one-way ANOVA  $<.001$ . There is no a significant difference between gender regarding Practice as determined by one-way ANOVA ( $p = .500$ ) (Table 6).

ANOVA test between age group and KAP domains towards osteoporosis among participants shows that there is a significant difference between ages regarding Knowledge as determined by one-way ANOVA ( $p < .001$ ). The result of this research also showed there is no significant difference between ages regarding attitude as determined by one-way ANOVA ( $p = .010$ ). There is a significant difference between ages regarding practice as determined by one-way ANOVA ( $p < .001$ ) (Table 7). This result complied with some study report (31) that there is significant differences were observed between age and knowledge of osteoporosis, ( $p=0.004$ ), and disagree with other study (2) There was no significant association between KAP regarding osteoporosis with age of the participants.

(Table 8) ANOVA test between level of education and KAP domains, there is a statistically significant difference between level of education regarding Knowledge, Attitude and Practice as determined by one-way ANOVA ( $p < .001$ ).

Concern correlation between KAP domains (Table 9), there is inverse moderate correlation between Knowledge and Attitude ( $\rho = -.366$ ) and statically significant ( $P < .001$ ). There is inverse moderate correlation between Knowledge and Practice ( $\rho = -.322$ ) and statically significant ( $P < .001$ ). There is weak correlation between practice and attitude ( $\rho = .161$ ) and it is not statically significant ( $P = 0.22$ ).

## 5. CONCLUSION

Adult patients had poor knowledge, attitude and moderate practice regarding Osteoporosis and fracture risk. Age, level of education, gender were significantly influence the level of knowledge, attitude and practice and consider as risk factors. In addition, there is inverse moderate correlation between Knowledge and Attitude. Also, there is inverse moderate correlation between Knowledge and Attitude.

## 6. RECOMMENDATION

The authority should upraise the level of awareness of community regarding osteoporosis by planned and coordinated programs in different mass media and social media. Continue medical education (CME) programs for doctors and health workers about osteoporosis. More researches should be carrying out.

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**Cite This Article:** Husam Abdulaziz Abdullah Abdo & Shadia Mohamed Idris (2022). Knowledge, Attitude and Practice of Osteoporosis among Adult Patients in Bashair Hospital, Sudan, 2021. *EAS J PsycholBehavSci*, 4(3), 83-91.