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Research Article

**KNOWLEDGE AND ATTITUDE OF SCABIES AMONG GENERAL
POPULATION IN MAJMAAH CITY, SAUDI ARABIA, 2018**

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Abstract:

*Human scabies is a parasitic infestation caused by *Sarcoptes scabiei* var *hominis*. The mite, barely visible to the naked eye, burrows into the epidermis and lays eggs, triggering a host immune response that leads to intense itching in response to just a few mites. Recently, Saudi Arabia has outbreak of scabies, especially in Mecca and western area. Saudi Ministry of Health announced that 619 cases have been discovered in Mecca, only 11 cases of them are Saudis. Scabies is treated by, Eradication of mites, there are relatively few well-designed trials comparing treatments for scabies. So the study amid to stand over the level of the knowledge and attitude of Scabies among general population in Majmaah City in 2018. As Scabies became one of the commonest dermatological problems worldwide, its prevalence is increasing in Saudi Arabia nowadays. However, it is easily prevented it by education, specially the participants showed that level of knowledge of Scabies disease was high among participants since there were 96.6% had ever heard about scabies disease before. Overall, findings indicated reasonable awareness of the general population in Majmaah city about the seriousness of Scabies disease. Where 47% of participants have very strong knowledge about scabies, and around 12% totally know it, while only 5% do not know scabies at all or have very weak knowledge about it. They also showed a high attitude towards dealing with scabies and infected persons. In addition, participants showed a high knowledge of disease and its causes, symptoms, and ways of transmission. Hence, there is a need for increasing health education and raising awareness and more implementation of prevention programs for scabies in order to decrease the incidence and consequences of these disease.*

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INTRODUCTION:

Human scabies is a parasitic infestation caused by *Sarcoptes scabiei* var *hominis*. The mite, barely visible to the naked eye, burrows into the epidermis and lays eggs, triggering a host immune response that leads to intense itching in response to just a few mites. Scabies infestation is usually complicated by bacterial infection, leading to the development of skin sores that, can cause more serious consequences such as septicemia, heart disease and chronic kidney disease.

Sarcoptes scabiei, var. *hominis* is a whitish-brown eight-legged mite, shaped much like a turtle. The female, which causes the clinical manifestations, is approximately 0.4 x 0.3 mm. This is at the border of visibility with the naked eye [1,2], and the burrowing habits of the parasite prevent it from being observed by patients. Burrowing is facilitated by secretion of proteolytic enzymes which cause keratinocytic damage detectable at the ultramicroscopic level [3]. When fertilized, the female burrows quickly into the epidermis to the level of the stratum granulosum, where it extends its burrow by approximately 2mm each day, lays two or three eggs at a time to a total of 10 to 25, and dies in place after one to two months. Larvae hatch in three to four days, molt three times, leave the burrow for the surface, copulate, and continue the cycle. At any one time, typical patients harbor an average of 10 to 15 mites during an initial episode, and about half as many with subsequent infestations [4,5].

Scabies is one of the commonest dermatological conditions, accounting for a substantial proportion of skin disease in developing countries. Globally, it affects more than 130 million people at any time. Rates of scabies occurrence vary in the recent literature from 0.3% to 46%. In the developed world, outbreaks in health institutions and vulnerable communities contribute to significant economic cost in national health services. However, in resource-poor tropical settings, the sheer burden of scabies infestation, as well as their complications, imposes a major cost on health-care systems. In 2010, it was estimated that the direct effects of scabies infestation on the skin alone led to more than 1.5 million YLDS (years lived with disability), and the indirect effects of complications on renal and cardiovascular function are far greater [6].

Recently, Saudi Arabia has outbreak of scabies, especially in Mecca and western area. Saudi Ministry of Health announced that 619 cases have been discovered in Mecca, only 11 cases of them are Saudis [7]. Also, Saudi Ministry of Health announced there are 16 cases of scabies have been

discovered in Riyadh, 29 cases in southern area [8]. Scabies affects people from every country. However, it is the most vulnerable, young children and the elderly in resource-poor communities who are especially susceptible to scabies as well as to the secondary complications of infestation. The highest rates occur in countries with hot, tropical climates, where infestation is endemic, especially in communities where overcrowding and poverty coexist [6].

Transmission of scabies is usually from person to person by direct contact. Transmission from parents to children, and especially from mother to infant, is routine. Schools do not ordinarily provide the level of contact necessary for transmission. In young adults, the mode of transmission is usually sexual contact. In typical conditions, mites can survive off a host for 24 to 36 hours [9]. Although uncommon, there have been many authenticated instances in which scabies was contracted by wearing or handling heavily contaminated clothing, or by sleeping in an unchanged bed recently occupied by an infested individual. Transmission through clothing or linens is more likely with higher parasite burdens as seen in crusted (Norwegian) scabies [1,2]. Animals can also contract scabies, but the subspecies that infect cats and dogs are distinct from those infecting humans. While cross-species transmission can occur, scabies contracted from a cat or dog is unlikely to cause extensive infestations on a human host unless the animal does not receive treatment. These mites do not usually reproduce on human hosts and rarely live longer than a few days they are not normally transmitted from one human host to another [2]. The prominent clinical feature of scabies is itching. It is often severe and usually worse at night. The pruritus is the result of a delayed type-IV hypersensitivity reaction to the mite, mite feces, and mite eggs [4]. Incubation period, Symptoms of scabies typically begin three to six weeks after primary infestation. However, in patients who have previously been infested with scabies, symptoms usually begin within one to three days after reinfestation, presumably because of prior sensitization of the patient's immune system [10]. Typical infestation, the essential lesion is a small, erythematous, nondescript papule, often excoriated and tipped with hemorrhagic crusts. It is not a dramatic lesion and not always easy to see. More striking, when present, is the burrow. Pathognomonic when correctly identified, the burrow is a thin, grayish, reddish, or brownish line that is 2 to 15 mm long. Burrows are often absent, however, or obscured by excoriation or secondary infection. Miniature wheals, vesicles, pustules, and rarely bullae may also be present. The distribution of

scabies usually involves the sides and webs of the fingers, the flexor aspects of the wrists, the extensor aspects of the elbows, anterior and posterior axillary folds, the skin immediately adjacent to the nipples (especially in women), the periumbilical areas, waist, male genitalia (scrotum, penile shaft, and glans), the extensor surface of the knees, the lower half of the buttocks and adjacent thighs, and the lateral and posterior aspects of the feet. The back is relatively free of involvement, and the head is spared except in very young children. Patients occasionally develop a nodular form of scabies, exhibiting firm, erythematous, extremely pruritic, dome-shaped lesions, 5 or 6 mm in diameter. The groin, genitalia, buttocks, and axillary folds are the usual sites of involvement. Patients can develop generalized urticaria with scabies, and there are case reports of patients presenting with urticaria as the initial manifestation of scabies [11]. Young children and infants often show heavy involvement of the palms and soles and all aspects of the fingers, and may even show evidence of mites under the nail plates. Lesions in children are usually more inflammatory than in adults and often are vesicular or bullous. Secondary staphylococcal infections, including impetigo, ecthyma, paronychia, and furunculosis, frequently complicate the picture, especially in the summer months. In addition, constant scratching and the application of irritating or sensitizing proprietary medications may result in extensive eczematization.

Crusted scabies, in most patients, after an initial exponential increase in mites and lesions in the early weeks of infestation, the numbers of both decline. Healthy patients with established scabies generally harbor fewer than one hundred mites. The reduction is largely a function of host cellular immunity. Crusted scabies (*Scabies crustosa*, Norwegian scabies) can occur in the presence of AIDS, leprosy, lymphoma, and other conditions and treatments that compromise cellular immunity [12].

The diagnosis of scabies is generally made from the history and the distribution of lesions. The examiner should suspect the possibility of scabies in patients with one or more of the following: Widespread itching that is worse at night, spares the head (except in infants and young children), and seems to be out of proportion to visible changes in the skin, A pruritic eruption with characteristic lesions and distribution, or Other household members with similar symptoms [13]. Skin scraping, in adults, areas most likely to yield mites are between the fingers, sides of hands, wrists, elbows, axillae, groin, breasts, and feet. Sites on the palms, soles, or torso may in cases of crusted scabies, large numbers of mites and eggs may be seen on skin scraping [14]. Dermoscopy helps in

examination of the skin surface with a handheld dermatoscope to allow visualization of specific structures related to the epidermis, the dermal-epidermal junction, and the papillary dermis may be a useful tool in scabies. The characteristic finding on dermoscopic examination is a dark, triangular shape that represents the head of the mite within a burrow. Eggs may also be visible. Of note, these features are frequently difficult or impossible to detect in patients with dark skin [15].

Scabies is treated by, Eradication of mites, there are relatively few well-designed trials comparing treatments for scabies. Considering the toxicity and efficacy of various therapies, topical permethrin 5% cream and oral ivermectin are reasonable first-line therapies. Other topical treatments for scabies include benzyl benzoate, crotamiton, lindane, Malathion, and sulfur in petrolatum [1, 2]. The largest such trial in 467 patients found similar clinical cure rates 28 days after a single whole-body application of 5% permethrin cream or 1% lindane lotion (91 versus 86 percent). Permethrin has less neurotoxicity than lindane, particularly in children, and is therefore preferred. Permethrin is classified as category B for use in pregnancy [16]. The cream should be removed by washing (shower or bath) after 8 to 14 hours. Although the relative efficacy of one versus two applications of permethrin has not been formally studied, a second application one to two weeks later has been recommended [4]. For the Ivermectin, an oral anthelmintic with a half-life of 36 hours, can also successfully treat scabies. One study found a much higher cure rate at seven days with single-dose ivermectin 200 mcg/kg than placebo (79% versus 16%) [17]. Randomized trials have suggested that a single dose of ivermectin 200 mcg/kg is as or more effective than a single application of 1% lindane, but less effective than a single application of permethrin. Two doses of ivermectin achieved equivalent cure rates to a single application of permethrin [18]. Ivermectin is considered first line therapy for large scabies outbreaks in nursing homes and in other facilities where topical therapy may be impractical. The nodular form of scabies, which does not respond well to topical treatment, may be another indication for ivermectin. Crusted scabies is also best treated with ivermectin, but in a regimen employing more doses than that used for routine scabies in a normal host [19]. Antihistamines can help control itching, which often persists for one to two weeks even after successful treatment because of the hypersensitivity reaction to mites, mite feces, and mite eggs [4]. After eradication of mites, medium or high potency topical corticosteroids can also be used to control itching [5].

For the prevention, scabies is transmitted by close or skin-to-skin contact, usual recommendations are that all members of the family and close contacts be treated at the same time to avoid an endless chain of cross contamination and reinfestation [20]. In general, scabies mites cannot survive for more than two to three days away from human skin. Appropriate options for items used within several days before treatment (clothing, linens, stuffed animals, etc.) include placing in a plastic bag for at least three days, machine washing with hot water and then ironing or drying in a hot dryer, or dry cleaning [21].

There was a cross-sectional study conducted in Afghanistan in 2017 to assess the knowledge and attitude and practice of scabies among students, the results showed, More than 80% participants aged 10-20 years. 44% reported that they are informed about scabies, 56% do not know about scabies. 62.9% got the knowledge through mass media and 37.1% reported are informed through medical professional, family and friends. Scabies is serious (16%) not serious (24%) did not know about the seriousness (39%). Diseases spread through sharing cloth and blankets (44%) [22]. Another study was conducted in Nigeria in 2015 about Knowledge of Scabies Among a Cohort of Medical Students, it involved 140 medical students to assess their knowledge, it showed the overall mean knowledge score was 7.8 ± 2.4 out of a maximum of 14 correct answers. Only 13(9.3%) of them had satisfactory scores ($\geq 75\%$). Neither gender, number of years in medical school or having seen at least one clinical case of scabies influenced the knowledge, with conclusion of poor knowledge of medical students about scabies [23].

So the study aimed to stand over the level of the knowledge and attitude of Scabies among general population in Majmaah City in 2018. As Scabies became one of the commonest dermatological problems worldwide, its prevalence is increasing in Saudi Arabia nowadays. However, it is easily prevented it by education.

MATERIALS AND METHODS:

A cross-sectional study based on a questionnaire distributed to the participants which are the parents who are living in Almajmaah city and surrounding villages, and agreed to fill the questionnaire. This study were conducted in Majmaah city and surrounding villages; to study the knowledge and attitude of scabies among general population in Majmaah city. The questionnaire involved questions about background characteristics of the participants like gender, age, level of education, and marital status in order to present personal and socio demographic

data. In addition to that the questionnaire included some questions to measure the level of knowledge of population toward Scabies like ever hearing about Scabies, causes of Scabies, signs and symptoms, ways of transmission of the disease. Also, the questionnaire included some questions to measure the level of attitude of population toward Scabies disease. The questionnaire was pre-tested before data collection started. The Study targeted to interview adult males and females (their age is above 18 years) who agreed to be involved in the study. This means that any person his/her age was below 18 years and was excluded from the study. Also, participants who refuse to be involved in the study by answering the questionnaire were excluded too. Finally, a sample of 119 participants was successfully interviewed from the total samples size which designed to be 339 participants. The size and sampling technique for the study is considered convenience, since we only interviewed participants within this pre-designated period, also the mode of sampling is considered convenience sampling. A structured data sheet was created to aid in data collection as a study tool, in addition, data was entered into the data sheet then into an Excel document, and this process was repeated for all variables. The duration of the data collection process was not exceeding four weeks. After raw data was processed in accordance with the best practice for raw data management to identify any inaccuracies in advance to the statistical analysis. And in order to achieve that task, implausible values were flagged. A similar process was applied to categorical variables to identify any potential anomalies. All identified anomalies were discussed with biostatistics team and were corrected prior to initiation statistical analysis. Data was filled into appropriately designed excel sheet. Statistical analysis was done using SPSS V22. Descriptive statistics will be presented as number, percentages, means and standard deviation in that report. All statistical tests were declared significant at a P value of 0.05. The ethical approval was obtained from the ethical committee of the Basic Health Research Centre of Majmaah University. Informed consent was obtained from the participants. The data was planned to be collected and was used for research purpose only and access to this data was for the principle investigator. Name and personal information of participants was not obtained as an ethical consideration.

RESULTS:

As mentioned before a sample of 119 participants was successfully interviewed. Since, the objective of this study was to determine the knowledge and

attitude of Scabies among general population of adult males and females in Majmaah City in 2018.

Almost all respondents were Saudi (95.8%), they were distributed among Majmaah city as follows; 43.7% were living in Al-Majmaah, 4.2% were in Hawtah Sudair, and 3.4% were in Rawdat Sudair, while 48.7% of the participants were living in surrounding villages around Majmaah city.

From data shown in figure (1), it is clear that sample contained female participants more than males (which is 84% and 16%, respectively).

The age distribution of the sample in table (1) shows that more than one third (37%) of the sample was aged 36-45 years old, also around 29% of the respondents were aged 26-35 years old. which means that more than half of the sample were not young youth since only 18% of sample were aged 18-25 years.

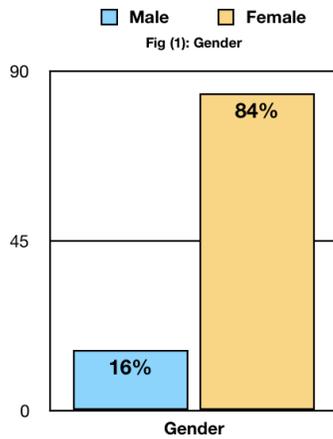
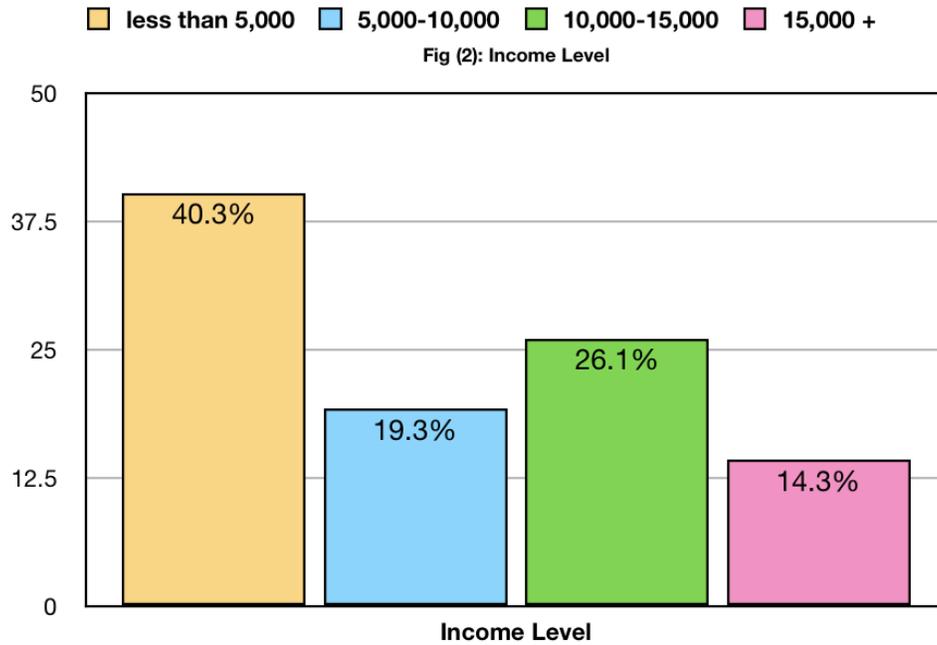


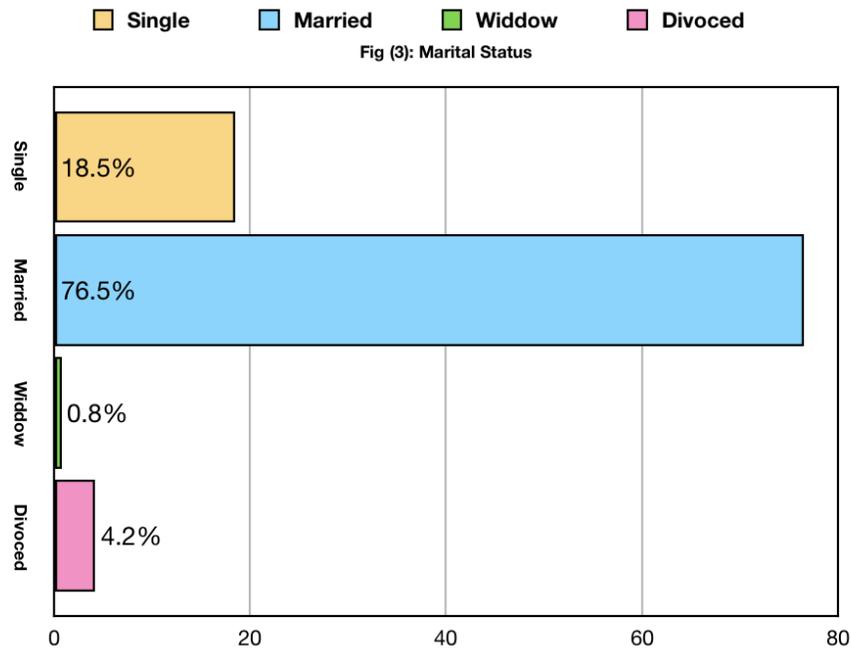
Table (1): Age Groups

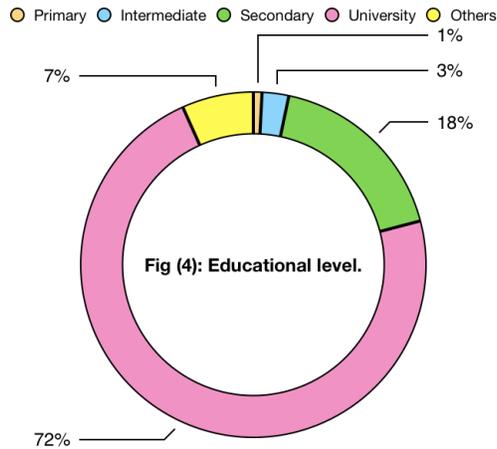
Age	Frequency	Percent %
18 - 25	21	17.6%
26 - 35	34	28.6%
36 - 45	44	37.0%
45 - 55	15	12.6%
56 +	5	4.2%
Total	119	100.0%

Data collected showed that 40% of the sample were having low income level compared with others since they received less than 5,000SR per month, while 19% received between 5,000SR to 10,000SR monthly, 26% had income between 10,000SR and 15,000SR, and only 14% had more than 15,000SR as monthly income.



Data in figure (3) shows that most of the participants were married (76.5%), and 18.5% were still single, while only 4.2% were divorced and 0.8% were widowed.





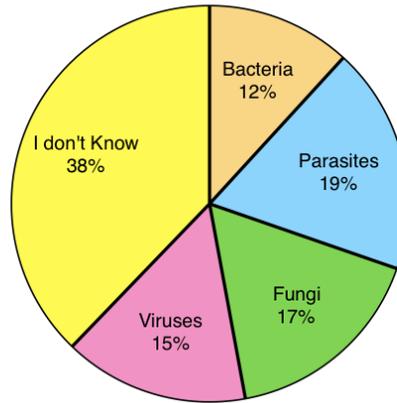
In addition, it was clear the most of sample were highly educated, where 72.3% of the participants had bachelor's degree from universities. And 17.6% of participants were secondary educated, while 2.5% of respondents were intermediate educated and 0.8% have primary education. Figure (4) shows also that 6.7% of the respondents were having other education (above university education).

Table (2): Ever heard of scabies disease

	Frequency	Percent %
No	4	3.4%
Yes	115	96.6%
Total	119	100.0%

According to the aim of the study which is divided into knowledge and attitude of Scabies among general population of adult males and females in Majmaah city, data which was collected from the participants showed that level of knowledge of Scabies disease was high among participants since there were 96.6% had ever heard about scabies disease before, while only 3.4% of the participants were never heard about it before. (As shown in table 2)

● Bacteria ● Parasites ● Fungi ● Viruses ● I don't Know
Fig (5): Causes of scabies disease



Concerning the general knowledge toward Causes of Scabies disease, the data collected in figure (5) shows that the most of respondents did not know what can cause Scabies disease (37.8%). However, participants were divided equivalently between reasons that can cause Scabies disease and they saw that Scabies can be a Parasites, Fungi, Viruses, or Bacteria disease (18.5%, 16.8%, 15.1%, and 11.8% respectively).

Table (3): level of knowledge about Transmission of scabies disease

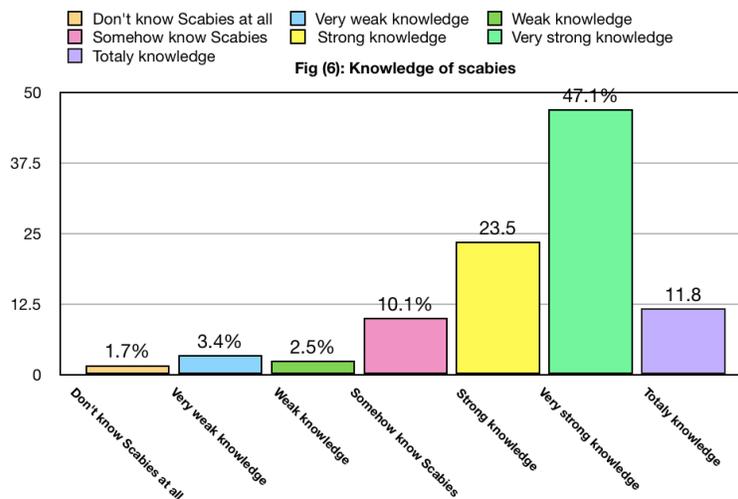
	Frequency	Percent %
Droplets	8	6.7%
Blood	3	2.5%
Contact	89	74.8%
I don't know	19	16.0%
Total	119	100.0%

Table (3) shows the level of knowledge about Transmission of scabies disease. Almost three quarters of the respondents know that contacting with infected person can transmit the Scabies disease (74.8%), and 16% did not know how Scabies transmit from infected person to another.

		Frequency	Percent
Scabies is a Treatable Disease	No	2	1.7
	Yes	106	89.1
	Don't know	11	9.2
Exchanging clothes with infected person spread scabies	No	13	10.9
	Yes	91	76.5
	Don't know	15	12.6
Total		119	100.0

Nearly all of the participants considered scabies as a treatable disease where 89.1% of the respondents know that scabies disease had cure. While only 1.7% of them seen that scabies have no cure. In addition, 76.5% of the participants in the study saw that exchanging clothes with infected person spread scabies disease. (Showned in table 4)

Generally, in order to stand over the level of scabies knowledge between people, a composite indicator was calculated from data collected by giving score to each question of knowledge questions and sum them up so the scale of knowledge varies from 0 to 6 (in which 0 means Do not know Scabies questions and 6 means totally knowledge of scabies). Data presents in figure 6 shows that 47% of participants have very strong knowledge about scabies, and around 12% totally know it, while only 5% do not know scabies at all or have very week knowledge about it.



Regarding the attitude of population towards scabies disease and people infected with it, data shows that almost all the respondent (95%) agreed on one shouldn't exchange clothes, towels and bedding with others (47.9% strongly agreed and 47.1% agreed). In the same way 92.4% of participants in the study agreed on Scabies patients have to be isolated from other people (42.9% strongly agreed and 49.6% agreed).

Table 4 also shows that 42.9% strongly agreed and 47.9% agreed with to keep distance from scabies sufferers is really necessary to illuminate infection with Scabies.

Table (5): attitude of population towards scabies disease and people infected				
	Strongly Agree	Agree	Don't agree	Total
You shouldn't exchange clothes, towels and bedding with others	47.9	47.1	5.0	100.0
Scabies sufferers have to be isolated	42.9	49.6	7.6	100.0
Scabies can be prevented by maintaining a good personal hygiene	43.7	44.5	11.8	100.0
To keep distance from scabies sufferers is really necessary	42.9	47.9	9.2	100.0
If found cases of scabies, treatment should be done quickly to prevent the transmission of the disease	54.6	38.7	6.7	100.0
Besides personal hygiene, there must be a good environment in order to prevent scabies	57.1	38.7	4.2	100.0

DISCUSSION:

This cross-sectional study was undertaken to determine the knowledge and attitude of Scabies among general population of adult males and females in Majmaah City. And to determine the level of knowledge among population about what scabies disease is, investigate the main causes of the disease, signs and symptoms, ways of transmission of the disease, and whether it is curable or not. Also the study aimed to stand over the attitude of general population towards scabies disease and how to deal with infected person in order to illuminate infection.

A self-administered questionnaire was randomly distributed to adults of both sexes aged 18 years and above. 119 people agreed to participate, answered the questionnaire and involved in the study.

In April 2017, there was a study about Common Dermatological Diseases in Saudi Arabia, it stated clearly that dermatological disorders are a great menace with the issue being overlooked and therefore not addressed satisfactorily. Consequently, it has been found that the lack of collective efforts, both at the local and international levels have significantly contributed in the vast spreading of these diseases. Saudi Arabia, therefore, need to formulate a strategy, at the communal and governance categories and find solutions to these problems. Subsequently, reliable therapies rarely focus on the biological aspects of a given ailment, but mainly on the improvement of the quality of life and also means of mitigation of subordinate psychiatric conditions like dejection or anxiety that emanates from the seriousness of these conditions. Therefore, it is usually important to deal

with these ailments in proper ways and motivations, to wipe them out completely. Indications of nervousness and despair should be handled through further evaluation of psychotherapeutic processes. Proper education on skin diseases should be provided at all academic levels as one way of reducing them. Consequently, skin conditions like psoriasis and atopic eczema have deep stimulus on patients' lives. More or less discernible sore or irritating indications disturb persons' collective life, their daily work and their personal associations. However, very repeatedly the effect of dermatological ailments on the quality of life might be undervalued in contrast to other more life frightening maladies like malignancy or heart infection [25].

In the same pattern in Iraq, a study on 300 scabietic patients (168 Male & 132 Female) to stand over the prevalence of Scabies among patients attending the dermatology outpatient clinic in Najaf governorate showed that age-specific prevalence of scabies was almost parallel for males and females. Whereas in the middle-age group, the prevalence of scabies was higher in the males (80%), ($p=0.004$). In addition, the study showed that age-specific prevalence of scabies stratified by duration of symptoms. Acute scabietic patients were more prevalent than chronic scabietic patients among various age groups ($p= 0.013$). It also showed that the topographical distribution of scabies lesions in males and females whereas axillae and breasts were most commonly affected in females, with statistically significant differences ($p=0.001$ and $p<0.000$ respectively). In males, there were more lesions on hands and genitalia than in females ($p= 0.001$ and $p= 0.02$ respectively).

Similar results were found in study of Dehghani et al. (2009) which was 74.6% in males and 25.4% in females, Mahmood & Nur (2008) reported that 54% were males and 46% were females. Converse results were found in another study (Downs et al., 1999), scabies in females was significantly higher than in males. The higher prevalence of male patients may be attributed to under-representation of females due to socioeconomic reasons. Scabies is most common in children and young adults, but may occur at any age (Burns, 2010). In our study, there was no patient less than 10 years attended the clinic. The age group (10-19) years had the highest prevalence rate (41.7%). High prevalence of scabies among school age children may be attributed to the overcrowding environment in schools and greater chances of mixing and playgrounds. This result agreed with other studies (Buczek et al., 2006; Lassa et al., 2011; Raharnie et al., 2012). As known, symptoms of scabies are burrows, erythematous papules and generalized pruritus with nocturnal predominance (Stone et al., 2008). Majority of scabietic patients in our study had the symptoms for less than 1 month (acute scabietics). Similar result was obtained by Sulaiman (2013) which found that 54.7% of patients had symptoms duration for less than 4 weeks. This result can be explained by incapability of patients to stand the upsetting pruritus; hence, they attended the clinic earlier than other patients who had scabies symptoms for more than 1 month (chronic scabietics). The latter group was asked whether they had already used traditional or herbal preparations or even unsubscribed medical products that might bring about some relief and the answer was positive. Others were found to apply their treatment incorrectly or were reinfested by an improperly treated contact. Prison was the main source of scabies infestation (49.3%). This may be due to overcrowding, poor hygienic standards, sharing the beds and blankets and prolonged contact with contagious infested prisoners.

In conclusion, findings indicated reasonable awareness of the general population in Majmaah city about the seriousness of Scabies disease. Where 47% of participants have very strong knowledge about scabies, and around 12% totally know it, while only 5% do not know scabies at all or have very weak knowledge about it. They also showed a high attitude towards dealing with scabies and infected persons. In addition, participants showed a high knowledge of disease and its causes, symptoms, and ways of transmission. Hence, there is a need for increasing health education and raising awareness and more implementation of prevention programs for scabies in order to decrease the incidence and consequences of these disease.

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