Open Science Journal of Clinical Medicine
2015; 3(5): 177-181
Published online September 22, 2015 (http://www.openscienceonline.com/journal/osjcm)

Knowledge of Scabies Among a Cohort of Medical Students

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To cite this article

Halima Mwuese Sule, Zuwaira I. Hassan, Mark D. Gyang, Kenneth Yakuba. Knowledge of Scabies Among a Cohort of Medical Students. *Open Science Journal of Clinical Medicine*. Vol. 3, No. 5, 2015, pp. 177-181.

Abstract

Scabies is a common skin infestation, endemic in developing countries, usually affecting families and large groups of people living together. The intense discomfort caused by the primary disease, the life threatening complications from secondary bacterial infection, along with the challenges and costs of correct diagnosis and proper treatment make it a public health problem. Sufficient knowledge about scabies by healthcare professionals is an essential tool in fighting the scourge of scabies. Methods: We undertook a survey to assess the level of knowledge about scabies among clinical medical students, potential doctors who had completed postings in dermatology and paediatrics where the subject of scabies is routinely taught, with the aim of identifying any possible needs for an improved education on this topic. Self-administered questionnaires were distributed to a cohort of clinical medical students in a university, selected by multi-staged random sampling. Results: Of 140 medical students surveyed, 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 (≥ 75%). Neither gender, number of years in medical school or having seen at least one clinical case of scabies influenced the knowledge. Conclusion: There exists a poor knowledge of scabies among clinical students who are potential doctors.

Keywords

Scabies, Knowledge, Medical Students, Skin Conditions

1. Introduction

Scabies is a parasitic skin infestation caused by the mite *Sarcoptes scabiei var hominis*. It occurs worldwide, and as many as 300 million people may be affected. [1] Scabies infestation occurs in people of both sexes and all ages irrespective of ethnic group or socioeconomic status, being most common in conditions of overcrowding, poverty and poor hygiene. [2], [3] In developed countries, the infestation rates occur similarly across all age groups, while in developing countries, higher susceptibility to infestation occurs in the age range of preschool children to adolescents. [4]

Scabies is endemic in the developing world, yet it is not recognized as a disease of public health priority in most developing countries. [5] The World Health Organization has recently added scabies to its list of Neglected Tropical Diseases. [6] Several studies show scabies is a problem in the developing world, including Nigeria. [3], [7]-[12]. Scabies is transmitted by close person to person contact which facilitates the transfer of the mite from one person to another. The mite burrows under the skin causing type IV hypersensitivity reactions with intense pruritus which is worse at night. The resultant skin lesions from hypersensitivity and scratching are prone to secondary infection with bacteria namely group A streptococci and *Staphylococcus aureus*. Scabies secondarily infected with bacteria gives rise to a range of complications such as folliculitis, impetigo, cellulitis, abscesses, septicaemia, glomerulonephritis, rheumatic fever, rheumatic heart disease and even death. [2], [5]

Because scabies mimics other skin conditions, recognizing scabies clinically may pose a challenge particularly for the inexperienced healthcare provider. Furthermore, the standard method of diagnosing scabies by microscopy of skin scrapings is not always helpful even when carried out by highly skilled technicians. [2] In developing countries where more sophisticated approaches to diagnosing scabies are not

available, clinical judgement is still practical. [6] Thus, sufficient and accurate knowledge about scabies in healthcare providers is paramount to create the desired high index of suspicion needed to make a clinical diagnosis. It has been shown that a single case of scabies introduced into a crowded community can result in an epidemic [13], [14]. Researchers in Pakistan and Belgium have shown that basic knowledge about scabies is important as it has in its implications for diagnosis, treatment and prevention of spread. [15], [16] There is paucity of data elucidating knowledge of scabies among healthcare workers. We evaluated the knowledge of scabies among a cohort of clinical students in a university in North central Nigeria.

2. Materials and Methods

The study was carried out in Jos, the Plateau State capital. From the 2 medical schools in Jos, University of Jos medical school was selected by balloting. Two classes of medical students (500level and 600level), who had completed paediatrics and dermatology postings qualified for the study. The 500 level class was selected by the toss of a coin. Information from the respondents was obtained using a pre-tested, self-administered questionnaire adapted from a previous similar study and based on relevant items from the literature. [16]-[20] Ethical clearance was obtained from Jos University Teaching Hospital Ethical Review Committee and verbal informed consent was obtained from respondents prior to distributing the questionnaires. Anonymity was maintained and there was no compulsion to participate in the study. The questionnaires were distributed to all respondents at the same time, in the classroom at the end of a class test when all were present. The first part of the questionnaire contained questions about socio-demographic information, while the second part contained questions on simple, basic knowledge about scabies: causative organism, transmission, clinical features, complications, diagnosis and common treatment. There were 14 questions; 9 of the 'single best response' type and 5 of the 'yes or no' type, with 54 options to choose from. An option of 'I do not know' was included for each question. One point was given for each correct response. No points were given for incorrect or 'I do not know' responses and no points were subtracted for incorrect responses. Respondents who had an overall score of $\geq$ 75% were considered to have satisfactory knowledge while those who had an overall score of < 75% were considered to have unsatisfactory knowledge.

Data analysis

Data was analyzed using Epi info version 7 statistical software package (CDC, Atlanta, GA) to calculate means $\pm$ standard deviations and percentages. Logistic regression analysis was used to determine associations between independent variables and outcome (level of knowledge). Confidence interval of 95% and significance level of <0.05 was applied.

Table 1. *Students' characteristics and level of knowledge of scabies.*

Variable	Frequency Total=140		Knowledge level				P value
			Satisfactory (13)		Non-satisfactory (127)		
Age (years)	**n**	**%**	**n**	**%**	**n**	**%**	
20-24	43	30.7	4	30.8	39	30.7	0.0062
25-29	90	64.3	7	53.8	83	65.3	
30-34	43	2.9	-	-	4	3.2	
35-39		2.1	2	15.4	1	0.8	
Sex							
Male	96	68.6	9	69.2	87	68.5	0.8950
Female	44	31.4	4	30.8	40	31.5	
Religion							
Christianity	129	92.9	11	84.6	118	92.9	0.2895
Islam	11	7.1	2	15.4	9	7.1	
Marital status							
Never married	131	93.6	12	92.3	119	93.7	0.0050*
Married	8	5.7	-	-	8	6.3	
Separated	1	0.7	1	7.7	-	-	
Years in Medical school							
5-6	56	40	6	46.2	50	39.4	0.6519
7-8	77	55	7	53.8	70	55.1	
9-10	7	5	-	-	7	5.5	
Seen a case of scabies							
Yes	22	15.7	4	30.8	18	14.2	0.1174
No	118	84.3	9	69.2	109	85.8	

*statistically significant

3. Results

3.1. Baseline Characteristics of Students

A total of 140 medical students were recruited and all completed the questions. Participants comprised 96 (68.6%) males and 44 (31.4%) females. The mean age was 26 $\pm$ 3 years. The mean number of years spent in medical school was 6.7 $\pm$ 0.94 years. Of the 140 students, only 22 (15.71%) had seen at least one clinical case of scabies. The results suggest a statistically significant association between marital status and level of knowledge. The participants' socio-demographic

characteristics are shown in Table1.

3.2. Knowledge Assessment

The highest correct responses were in the sections on organ affected by scabies (93.6%), followed by factors aiding the spread of scabies (88.5%). Fifty-four percent of the students did not know the causative organism of scabies; 95% did not know the pathognomonic sign; 94% did not know its severe form (Norwegian scabies), and 54% did not know the complications. In methods for diagnosing scabies, only 40 (29%) knew that scabies could not be diagnosed by doing a blood culture while 85 (60.7%) knew that scabies could not be diagnosed by stool analysis. Sixty-six percent did not know the most extensively used scabies treatment (benzyl benzoate) in Nigeria. See Table 2.

Table 2. *Medical students' knowledge of items about scabies.*

Knowledge item asked about scabies	Correct response	
	Frequency	Percentage %
1. Causative organism of scabies	64	45.7
2. Organ affected by scabies	131	93.6
3. Pathognomonic feature of scabies (burrow)	7	5
4. Norwegian scabies; a form of severe scabies	8	5.7
5. Common features of scabies	121	86.4
6. Features of complicated scabies	62	44.3
7. Modes of spread of scabies	87	62.1
8. Factors aiding spread of scabies	124	88.5
9. Scabies is diagnosed by clinical signs and symptoms (true)	113	80.7
10. Scabies is diagnosed by microscopy of skin scrapings (true)	120	86.9
11. Scabies is diagnosed by blood culture (false)	40	29.4
12. Scabies is diagnosed by stool analysis (false)	85	60.7
13. High index of suspicion is required for clinical diagnosis (true)	94	67
14. Treatment of uncomplicated scabies	47	33.6

Overall, the mean knowledge score was 7.8 ± 2.37 out of a maximum of 14 correct answers. Knowledge was assessed to be poor in the respondents; with 13 (9.3%) of them achieving satisfactory scores ($\geq$75%), while the majority 127 (90.7%) achieved unsatisfactory scores (<75%). The results did not show any statistically significant association between knowledge of scabies and gender, number of years spent in medical school, or having seen at least one clinical case of scabies. The age group 35-39 years showed a statistically significant relationship with knowledge (P=0.025).

4. Discussion

One hundred and forty clinical medical students who had completed clinical postings in paediatrics and dermatology and therefore expected to be knowledgeable on the topic were interviewed by self-administered questionnaires to assess if their knowledge of scabies was satisfactory or not. This study revealed an overall unsatisfactory knowledge of scabies among medical students, a group of potential doctors. Only 9.3% had satisfactory knowledge about scabies which reflects an overall poor knowledge in the study population. Considering the fact that one single case of scabies introduced into a crowded community can result in an epidemic [10], [11], this finding of poor knowledge of scabies in potential doctors living in an endemic region has very serious implications. Good knowledge of scabies is not only key to creating the high index of suspicion required to make a correct clinical diagnosis, but it is also essential in confirming the diagnosis, prescribing adequate treatment and ensuring prevention of reinfection and spread. As a secondary finding, only 15.7% of the students had never seen a case of scabies. While this secondary finding may have contributed to the overall poor knowledge of scabies, it is also possible that the poor knowledge of scabies might have actually limited the ability to recognize scabies even when it was seen. Only 5% of them knew that the burrow was pathognomonic for scabies. The importance of the burrow in scabies cannot be overemphasized. Not only does the burrow suggest the presence of the infective female mite which may be demonstrated at the end of the burrow, but high yields for positive microscopy result are more likely to be obtained when skin scrapings are taken from sites with undistorted burrows. [2]

The results suggest that there is a statistically significant association between level of knowledge of scabies and marital status (see table 1, P value=0.0050), however this may be explained by the large difference between the numbers of married and unmarried respondents rather than any statistical association.

To the best of our knowledge, there are currently no similar studies among medical students for us to compare this study with, however similar studies have been conducted in general practitioners and dermatologists in other parts of the world. [15], [16] The result of this study is similar to findings in a Pakistani study that reported a general lack of knowledge regarding various aspects of scabies among general practitioners (36% had satisfactory knowledge), and the researchers attributed this lack of knowledge to be responsible for the alarming prevalence of scabies in their community. [16] The finding of low knowledge is in contrast to findings of another similar study carried out in Western Europe, where researchers compared scabies knowledge in general practitioners and dermatologists. [17] Both groups of professionals were assessed to have acceptable knowledge of scabies, though the dermatologists had higher scores than general practitioners. The Western Europe study was carried out in a more developed part of the world where health and educational systems are better structured, so it is not too surprising that the outcome was an acceptable level of knowledge, unlike our study and the Pakistani study both in developing countries with similar health and educational systems. This study did not show any significant association between scabies knowledge and having seen a case of

clinical scabies, or number of years spent in medical school. Similarly, the Pakistani study reported that increasing years of experience did not improve the level of knowledge of scabies among general practitioners; however, they did not investigate whether level of knowledge was influenced by the number of scabies patients seen by the general practitioners. In our study, students who had satisfactory scores were not necessarily those who had seen a case of scabies or those who had spent more years in medical school. On the contrary, the Western Europe study showed that the knowledge score was positively influenced by the number of years of experience in the profession and the number of patients seen. It is expected that in the developing world including Nigeria where scabies is endemic [9]-[12], medical personnel would have frequent and numerous encounters with cases of scabies, however this may not always be the case as seen in this study. A possible explanation for this may be because many people infected with skin conditions including scabies rather than come to the hospital often seek help from local pharmacies or utilize local remedies like aloe vera plant gel and local black soap with some degree of positive results (unpublished data). There is also the chance that cases of scabies do come to the hospital but they are not recognized and therefore misdiagnosed as other skin conditions. [2] Other reasons may be linked to the students' attitude to learning or the undergraduate medical curriculum in dermatology as some researchers have reported. [19], [20] This study showed a significant relationship between age and scabies knowledge (Table 3) unlike the Pakistani study where age did not have any significant effect on knowledge. The odds ratio suggested that people in the age group 35-39 years are more likely to have a satisfactory knowledge of scabies; however, this may not be a true association but rather an error due to the small number of respondents in this age group.

Table 3. *Logistic regression analysis model of correlates of scabies knowledge.*

Correlates	Odds ratio	95% confidence interval	P value
Age (years)			
20-24	Reference		
25-29	0.8223	0.2272-2.9754	0.7656
30-34	0.0000	0.0000->1.0E12	0.9742
35-39	19.5000	1.4315-265.6365	0.0258*
Sex			
Male	Reference		
Female	0.9667	0.2809-3.3264	0.9571
Years in medical school			
5-6	Reference		
7-8	0.8333	0.2641-2.6298	0.7558
9-10	0.0000	0.0000-1.0E12	0.9686
Seen a case of scabies			
No	Reference		
Yes	0.3716	0.1034-1.3350	0.1292

*statistical significance

The findings of this study demonstrate that the overall level of scabies knowledge in 500 level medical students is not satisfactory. The result of this low knowledge may not be un-associated with the fact that there was an overall poor exposure to clinical cases of scabies. Only very few students (15.7%) had seen at least one clinical case of scabies, and the majority 84.3% had never seen a case of scabies. It is possible that students may have seen cases of scabies, without recognizing it due to their poor knowledge about scabies. Also, the ability to recall having seen a case of scabies may have been subjected to bias. The study did not assess the attitude of the students towards paediatrics and dermatology posting or scabies in particular; this may have given more insight into the reasons for low level of knowledge.

5. Conclusion

This study has demonstrated unsatisfactory level of knowledge about scabies in 500 level medical students of a Nigerian university, and most of the students had never seen a clinical case of scabies. With this poor knowledge, students who are on their way to becoming doctors are not equipped to identify, treat or prevent the spread of scabies which is endemic in their geographical location. Scabies is still a problem in Nigeria and an important strategy to tackle this challenge is for health care providers to be knowledgeable about the infestation. This knowledge will aid timely intervention so as to avoid missed or delayed diagnosis that could lead to uncontrollable spread and complications. There is a need for similar and larger studies to be conducted in other cadres of healthcare professionals and in other parts of the country so that results can be compared and appropriate measures taken where necessary.

Acknowledgements

The authors wish to acknowledge the medical students that participated in this study.

References

[1] Chosidow O. Clinical practices. Scabies. N Engl J Med 2006; 354: 1718.

[2] Walton SF, CurrieBJ. Problems in Diagnosing Scabies, a Global Disease in Human and Animal Populations. Clin Microbiol Rev. 2007; 20: 268-279.

[3] Okoronkwo MO. Scabies among children in Police and Army barracks and at Mado village of Jos, Plateau State of Nigeria. Highland Med Res J. 2003; 1: 40-47.

[4] Andrews RM, McCarthy J, Carapetis JR, Currie BJ. Skin disorders, including pyoderma, scabies and tinea infestations. Ped Clin North Am. 2009; 56: 1421-1440.

[5] Romani L, Koroivueta J, Steer AC et al. Scabies and Impetigo Prevalence and Risk Factors in Fiji: A National Survey. PLoS Negl Trop Dis 9 (3): e0003452. doi: 10.1371/journal.pntd.0003452.

[6] Hay RJ, Steer AC, Engelman D, Walton S. Scabies in the developing world: its prevalence, complications, and management. Clin Microbiol Infect 2012; 18: 313–323.

[7] Sambo MN, Idris SH, Umar AA, Olorukooba AA. Prevalence of scabies among school-aged children in Katanga rural community in Kaduna state, Northwestern Nigeria. Ann Nigerian Med 2012; 6: 26-9.

[8] Airahi LU, Onunu AN,Otabor CU. Parasitic dermatoses as seen at the University of Benin Teaching Hospital, Benin City in Nigeria. Afr J Clin Exp Microbiol. 2003; 4: 24-30.

[9] Agrawal S, Puthia A, Kotwal A, Tilak R,Kunte R, Kushwaha A. Mass scabies management in an orphanage of rural community: An experience. Med J Armed Forces India. 2012; 68: 403-406.

[10] Akhtar SJ, Maan MA, Iqbal J, Kapadia N. Treatment of scabies simplified. J Pak Ass Dermatol. 2007; 17: 240-249.

[11] Ogunbiyi AO, Owoaje E, Ndahi A. Prevalence of skin disorders in school children in Ibadan, Nigeria. Pediatr Dermatol. 2005; 22: 6-10.

[12] Oducko OM, Onayemi O, Oyedeji GA. A prevalence survey of skin diseases in Nigerian children. Niger J Med. 200l: 64-67.

[13] Andersen BM, Haugen H, Rasch M, Heldal Haugen A, Tageson A. Outbreak of scabies in a Norwegian nursing homes and home care patients: control and prevention. J Hosp Infect. 2000; 45: 160-164.

[14] Obasanjo OO, Wu P, Conlon M, et al. An outbreak of scabies in a teaching Hospital: lessons learned. Inft Control Hosp Epidermiol. 2001: 22; 13-18.

[15] Lapeere H, Brochez L, De Weert J, Pasteels I, De Maeseneer J, Naeyaert J. Knowledge and management of scabies in general practitioners and dermatologists. Eur J Dermatol 2005; 15(3): 171-175.

[16] Rathi SK, Rathi HS, Lakhani H, Hansotia MF. Awareness about scabies among general medical practitioners of Karachi, Pakistan. J Pak Med Assoc. 2001; 51: 370-372.

[17] Golant Ak, Levitt JO. Scabies: A review of diagnosis and management based on mite biology. Paediatr Rev. 2012; 33: 48-59.

[18] Walton SF, Currie BJ. Problems in diagnosing scabies, a global disease in human and animal populations. Clin Microbiol Rev. 2007; 20: 268-277.

[19] Okoro OE, Ogunbiyi AO, GeorgeAO, Bello TO. Challenges of dermatology training among internal medicine resident doctors in Nigeria. Jos JMed. 2012; 6: 6-9.

[20] Clayton R, Perera R, Burge S. Defining the dermatological content of undergraduate medical curriculum: a modified Delphi study. British Journal of Dermatology 2006; 155: 137-144.