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Knowledge, Attitude and Practices regarding Brucellosis among Medical Practitioners of Karachi

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ABSTRACT

Background: Brucellosis presents with generalized symptomatology and in a country like Pakistan it is commonly misdiagnosed by the medical practitioners as any endemic disease. We aim to assess the knowledge, attitude and practices regarding Brucellosis among the medical practitioners of Karachi and differences in knowledge scores across gender and working sectors. The study was conducted from January 2017 to April 2017 in Karachi. **Method:** Our study was a cross – sectional KAP survey, conducted with the help of a structured questionnaire among 217 medical practitioners by convenient sampling. They were divided into two groups with respect to workplace: Group 1 and Group 2. The results were analyzed using SPSS version 21. Chi-square test was used to establish associations. **Results:** The results showed that although 89.9% of the medical practitioners have heard about brucellosis, yet only 27.6% were able to identify Brucellosis as the second most emerging zoonotic disease. Across gender, more female medical practitioners achieved good knowledge score as compared to male practitioners. In group 1, private sector whereas in group 2, teaching hospital's medical practitioners had higher percentage of good score. In the attitude section, 47.5% of the practitioners strongly agreed that Continuing Medical Education (CME) seminars help in creating awareness about diseases. In practice, poor response was recorded for inquiry of questions about Brucellosis in medical history despite of good knowledge about their importance. **Conclusion:** The study recognized a gap in knowledge and practices of the medical practitioners hence; there is a need to conduct CME Sessions about the neglected disease.

Keywords: Brucellosis, Zoonosis, Neglected Disease, Awareness, Health Belief Model, KAP Study.

INTRODUCTION

Brucellosis is the second most emerging zoonotic disease in the world [1]. Globally, its incidence is 500,000 cases in humans [2]. Its prevalence in humans is 11 – 14% across Pakistan according to a survey [3]. Signs and symptoms of Brucellosis are non-specific and include fever, sweats, malaise, anorexia, headache, pain in muscles and fatigue [4]. Since patient presents with nonspecific symptoms, the disease is most often misdiagnosed by the medical practitioners.

The disease is recursive and is associated with many severe complications like endocarditis and meningio-encephalitis [5]. So, it is vital that Brucellosis is diagnosed and treated timely.

Brucellosis is becoming a major health problem in Pakistan, so there is a strong need to create awareness among the medical practitioners regarding Brucellosis [3]. Diagnostic tests and complete treatment for Brucellosis exist. It is essential for a medical practitioner to keep Brucellosis in mind while dealing with a febrile patient living in endemic areas or in patients who have travelled to an endemic area [5]. Rose Bengal Plate Test is the screening test [3]. Tetracycline and aminoglycosides are used for the treatment of Brucellosis while ceftriaxone is the drug of choice for brucellar complications [5].

History taking is very important in case of Brucellosis. It has been well established that Brucellosis is the disease of cattle which can be transmitted to humans by direct contact and consumption of raw dairy products and meat [6]. Pakistan, being an agricultural country, has a high incidence rate of Brucellosis as rural income relies largely on livestock breeding and dairy products [7]. Yogurt is the top most dairy product consumed here which is majorly made from raw milk, raising a major concern. Brucella species can survive for long periods in dust, dung, water, slurry, aborted fetuses, soil, meat and dairy products. Eid-ul-Azha is a high-risk time for the spread of Brucellosis [8], when animal – human interaction is at its peak.

Aim of this study was to assess the knowledge, attitude and practices (KAP) regarding Brucellosis among the medical practitioners of Karachi, and to assess the differences in knowledge scores across gender and the working sector of medical practitioners. KAP study has been used as it serves as an educational tool for the community and will enable a more efficient process of awareness creation [9]. Assessment of awareness on the Basis of Health Belief Model (HBM) in our study will attempt to explain and predict health behaviors by focusing on the attitudes and beliefs of individuals through its six components [10].

MATERIALS AND METHODS

Our study was a cross-sectional KAP survey, conducted in Karachi with the help of a structured questionnaire among the medical practitioners. The questionnaire was not a validated tool since not many studies have been conducted related to our topic of research.

The duration of our study was four months i.e. from January 2017 to April 2017. The medical practitioners working in different hospitals and the ones practicing as General Physician in different areas of Karachi were included in the research by convenient sampling.

Sample size of 217 was calculated by using the formula of “Sample Size Calculation for Prevalence Study”

$$n = \frac{Z^2 P (1-P)}{d}$$

A study conducted in Iran by Mohammad Aligol et, al. regarding Brucellosis amongst women was used as a reference for the calculation of the sample size [11]. The inclusion criteria of the targeted population were current working medical practitioners with minimum clinical experience of six months irrespective of age and gender. We excluded recent medical graduates with no clinical experience or experience of less than six months or those who were not in practice.

The results were analyzed using SPSS version 21. For knowledge section scoring was done, the number of correct responses recorded and simple frequencies calculated. The scoring criterion was built by assigning marks to each question in the section of Knowledge with a total score of 20. The scores were scaled as low, moderate and good depending upon each correct answer. A score of less than or equal to 6.5 was set as Low, a score range from 7 to 13.5 was set as Moderate and a score of greater than or equal to 14 was set as a Good score.

For other sections, simple response frequencies were calculated while Chi-square test was used to establish association of knowledge score amongst the gender and work place of the medical practitioners. A p value of <0.05 was taken as significant.

The research proposal was duly approved by the ethics committee of Jinnah Medical and Dental College, Karachi. The respondents were asked for written consent and it was made sure that each participant signed the consent form. They were

assured that the information they provide will be kept confidential and will be used only for the purpose of this study. Their identity will not be revealed at any stage of the study.

RESULTS

Among a total of 217 medical practitioners, 81(37.3%) males and 136 (63.7%) females were part of the study. The median age was 29 (IQR=6) years with the clinical experience of 3 (IQR=6) years. The medical practitioners were selected from each of the two groups, Group 1 – 126 (58.1%) physicians from private sector and 91(41.9%) from public sector, Group 2 – 97(44.7%) physicians from teaching hospitals and 120 (55.3%) from non – teaching hospitals. Section – wise results are shown in Tables 1 to 4.

Table 1. Number of correct responses in the Knowledge section with integration of HBM.

Serial Number	Question	Correct response n (%)	Component of HBM assessed
1	Most common zoonotic disease	60 (27.6)	
2	Heard about Brucellosis	195 (89.9)	Perceived Barrier
3	What causes Brucellosis	146 (67.3)	
4	Screening test for Brucellosis	82 (37.8)	
5	During history taking it is important to inquire about	101 (46.5)	
6	How dangerous is brucellosis	46 (21.2)	
7	Think it is contagious	145 (66.8)	
8	How you think it is transmitted	68 (31.3)	Perceived Susceptibility
9	How long it persists	50 (23.0)	Perceived Severity
10	Complications attributed to its recurrence	106 (48.8)	
11	Is there any vaccine availability for brucellosis in humans	97 (44.7)	
12	Measures to prevent disease	143 (65.9)	Perceived Benefits

Table 2. Knowledge score comparison related to gender and workplace.

Variable		Poor n %	Moderate n %	Good n %	p-value*
GENDER					
Male	n=81 (37.4%)	18(22.2)	33(40.7)	30(37.0)	0.024
Female	n=136 (62.6%)	17(12.5)	44(32.3)	75(55.1)	
WORKPLACE					
Group 1					
Public Sector	n=91 (41.9%)	12(13.2)	39(42.8)	40(43.9)	0.144
Private Sector	n=126 (58.1%)	23(18.2)	38(30.1)	65(51.5)	
Group 2					
Teaching Hospital	n=97 (44.7%)	15(15.4)	29(29.8)	53(54.6)	0.222
Non-teaching Hospital	n=120 (55.3%)	20(16.6)	48(40)	52(43.3)	

(*calculated using chi-square test)

Table 3. Response in percentages regarding the attitude of the medical practitioners on a Likert scale with HBM integration.

Serial number	Question	Strongly disagree	Disagree	Neither Agree nor disagree Agree	Agree	Strongly agree	Component Of HBM assessed
1	Brucellosis Is a Major Health Problem In Pakistan?	6.5	29	25.3	31.3	7.8	Perceived Barrier
2	Brucellosis is being largely misdiagnosed?	1.4	12.4	22.6	47.5	16.1	Perceived Threat
3	Patients With Brucellosis Like Symptoms Should Be Referred to a Consultant?	1.4	4.6	12	56.7	25.3	Self-Efficacy
4	There Is A Need To Create Awareness amongst Medical Practitioners?	9	2.8	5.1	49.3	41.9	
5	Attending CME seminars help to create awareness amongst medical practitioners?	0.9	1.8	6.5	43.3	47.5	Perceived Benefits

Table 4. Response in percentages regarding the practices of the medical practitioners with HBM integration.

Serial Number	Question	Options	Response (%)	Components of HBM assessed
1	Do You Send Blood Samples For Culture Of Patients Who Present With Recurrent Fever Along With Arthritis?	Always	42.9	Cues to Action
		Often	26.7	
		Sometimes	20.7	
		No	9.2	
		No-response	0.5	
2	During History Taking in similar cases, Do You Inquire About Recent Animal Contact, Raw Meat and Milk Consumption?	Always	35.9	
		Often	25.3	
		Sometimes	25.8	
		No	12.4	
		No response	0.5	
3	How Often Do You Refer Patients with such Symptoms?	Sometimes	25.3	Self-Efficacy
		Often	30.4	
		Only Complicated cases	28.6	
		Never	15.2	

4	How Often Do You Attend CME Seminars?	Twice a year Once a year Frequently I don't No response	44.2 35.5 6.9 12.9 0.5
5	When Did You Attend Last CME Seminars?	Last week Last month 6 months ago Year ago No response	15.4 22.6 30.4 22.6 9.7

DISCUSSION

Brucellosis is an infectious disease with acute phase that may lead to febrile chronicity. It often goes misdiagnosed by majority of the medical practitioners due to similarity in symptoms with endemic diseases of Pakistan. Since not many KAP studies have been conducted related to Brucellosis in Pakistan as well as other parts of the world, there is not much data hence, reference from other diseases have been used.

In the study, we found out that 28.1% of the medical practitioners had considered cellulitis as the most common zoonotic disease, this was a higher response compared to Brucellosis, which was marked by only 27.6% of the total medical practitioners. This suggests that there is need for spread of awareness about the neglected zoonotic disease. Majority of the medical practitioners had heard about Brucellosis and the main source of information was through the medical curriculum. The physicians had correctly identified bacteria as the causative agent yet moving towards the diagnostic screening test for brucellosis, only 37.8% of the total population were able to select Rose Bengal Plate as a diagnostic test which becomes a rising concern, since the generalized symptoms of the patient would often go misdiagnosed without the confirmatory test, thereby considering the disease among local endemic diseases such as typhoid, tuberculosis, infective endocarditis, and rheumatic fever.

The transmission of the zoonotic disease occurs by consumption of raw meat, unpasteurized milk products and also through recent contact with animal. Hence, it is essential to appropriately inquire about such questions during history to reach the probable diagnosis and in the study 46.5% of the medical practitioners had responded positively and agreed for accurate queries to the patients. A study conducted in Turkey by Selma Guler et; al. stated that in 75.6% of 205 patients with a reported probable route of infection was unpasteurized dairy products. Also, the ratio of contagion from milk and dairy products was reported to be 31% - 81%. The disease is also seen mostly in rural areas where contact with animals is more frequent and food hygiene is poor. Since the disease is contagious between normal family members, family members of patients with brucellosis must be investigated [12].

Brucellosis often leads to disability; majority of the medical practitioners had poorly responded by considering that the disease may cause death and only 21.2% had chosen the right option. Regarding duration of disease persistence, 23% correctly responded that the disease persists for 2 - 3 weeks, rest of the population was not able to recognize the duration, and if not managed promptly, relapse of the disease is a typical feature. This may lead to progression of the disease into chronic stage and complications which is yet another rising concern. In this context, a retrospective study conducted in Turkey by Bircan Kayaaslan et al showed that delay of more than 14 days in the diagnosis of brucellosis significantly increased the risk of complications ($P = 0.002$). In addition, long-term follow-up exams indicated that 64% of the patients developed recurrent symptoms [13].

The knowledge score between the genders was also evaluated and it was revealed that 55.1% female medical practitioners had good score compared to 37% male medical practitioners. On the other hand, a study conducted in Saudi Arabia about healthcare workers knowledge regarding COVID – 19 hygiene practices, showed that no significant different was found across gender [14]. There was no significant difference in the Knowledge score among the working sectors of the medical practitioners. A study by Irfan et, al. examined service quality in hospitals of Pakistan, which found that private hospitals were delivering better service

quality to their patients as compared to public hospitals, particularly on the dimensions of empathy and tangible factors, followed by assurance and timeliness of the service [15].

Among the participants 56.7% agreed that patients with brucellosis like symptoms should be referred to the consultant. Only half of the respondents agreed to the fact that Brucellosis largely goes misdiagnosed so there is need to create awareness which can be done through CME sessions. In our study 44.2% of physicians attended CME seminars twice a year. Importance of CME was also identified by 1st regional meeting of Global Alliance for Medical Education (GAME) in Mumbai which emphasized on the fact that there is always a need for right CME for the right doctor group at the right time to create appropriate learning levels [16].

In practice, less than half of responses said that blood samples of patient with recurrent fever along with arthritis should be sent for culture. About 35.9% respondents always took history about recent animal contact and consumption of raw milk and meat. 28.6% believed that only complicated cases of brucellosis like symptoms should be referred to consultants. A study conducted in Lahore about awareness level regarding human papilloma virus vaccine among female doctors also identified gap in knowledge and practices regarding prescription of vaccine as identified by our study regarding brucellosis [17]. According to another study carried out in Saudi Arabia, 16% of the physicians were unaware of any clinical guidelines available for the management and prevention of osteoporosis, which marks a huge knowledge gap, so awareness program regarding national guidelines for the disease management was proposed [18].

It is suggested that awareness programs regarding knowledge as well as practices on Brucellosis should be carried out nationwide which should have special emphasis on its incidence, symptomatology, screening tests, its duration of persistence with treatment regimen, modes of transmission, methods of prevention and removal of any misconceptions present, which will help to overcome the difference in knowledge and practice regarding the disease. Similarly, an interventional KAP study conducted in Iran showed that, the knowledge and awareness of the intervention group was enhanced significantly after the intervention compared to the knowledge of the control group [11]. Hence similar interventional studies using Health Belief Model needs to be carried out in Pakistan as a trial for making of health policy regarding the disease.

CONCLUSION

There is a need to create awareness about the disease since medical practitioners had satisfactory knowledge score but many did not know about the screening test for brucellosis and duration of persistence of the disease. Our Study identified gap in the knowledge and practices, although more than half of the practitioners knew the correct questions to inquire in history taking yet less than 40% applied in practice for brucellosis.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

All the authors equally contributed in planning and collecting data, drafting manuscript and analyzing data to be qualified for authorship.

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