

## AWARENESS AMONG BUTCHERS REGARDING CRIMEAN CONGO HEMORRHAGIC FEVER IN RAWALPINDI CANTT

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### ABSTRACT

**Objective:** To study the awareness of butchers regarding Crimean-Congo Haemorrhagic fever (CCHF) in relation to their education level.

**Study Design:** Cross sectional survey.

**Place and Duration of Study:** Conducted from January to March 2015 in Qasaiee Chowk and Tench Bhatta markets of ward 5 of Rawalpindi cantt.

**Material and Methods:** Sample size was calculated using G-Power sample size calculator at 95% confidence level with an effect size of 0.38. Ward 5 of Rawalpindi cantt was chosen through lottery method and all available professional butchers in the markets were interviewed with informed consent. A pre-tested 14 items closed ended questionnaire was used and interview was conducted by a well briefed team of medical students. Data was analyzed using SPSS version 20.0.

**Results:** Results showed that only 14 (9.33%) butchers knew the name of CCHF. Out of these 10 (71.4%) had some form of formal education. All 14 of these had heard about CCHF from television proving it to be an important medium of information. However none of the 150 respondents took any preventive measure against CCHF.

**Conclusion:** Our study concluded that the level of awareness regarding CCHF in butchers is very low and no preventive measures are taken by them. Also the level of education has a significant effect on the awareness.

**Keywords:** Butchers, Crimean-Congo, Hemorrhagic fever virus, Pakistan, Prevention.

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### INTRODUCTION

Crimean Congo Haemorrhagic fever (CCHF) is a member of group of infections called the viral haemorrhagic fevers. These are acute infections with high mortality rates and include Lassa Fever, Yellow fever, Ebola, Dengue, Rift Valley fever, Hantaan haemorrhagic fevers and Crimean Congo Haemorrhagic Fever (CCHF)<sup>1</sup>.

This acute illness caused by a Nairovirus of Bunyaviridae family of RNA viruses is usually caused by bite of Hyalomma Tick but can also easily be transmitted through blood and tissue of infected animals and through contact with the blood of a human patient. The incubation period varies, 1–3 days after the tick bite with a

maximum of 9 days and 5–6 days after exposure to infected biological material with a maximum of 13 days<sup>2,3</sup>.

Disease is sudden in onset, with fever, myalgia, (muscle ache), dizziness, neck pain and stiffness, backache, headache, sore eyes and photophobia (sensitivity to light) being first to appear. Nausea, vomiting, diarrhoea, abdominal pain and sore throat also appear early on, followed by sharp mood swings and confusion. After a couple of days, the agitation may be replaced by sleepiness, depression and lassitude, and the abdominal pain may localize to the upper right quadrant, with detectable hepatomegaly (liver enlargement).

Other clinical signs and symptoms include tachycardia (fast heart rate), lymphadenopathy (enlarged lymph nodes), and a petechial rash (a rash caused by bleeding into the skin) on internal

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mucosal surfaces, such as mouth and throat, and skin and other haemorrhagic phenomena for example rainbow urine and nose-bleed. The severely ill patients may experience renal, hepatic or pulmonary failure after the fifth day of illness<sup>2</sup>. Fatality rate of the disease is estimated to be 10-40%<sup>2</sup> by World Health Organization (WHO) but rates as high as 50% have also been recorded<sup>3</sup>.

This disease was first recognized in the Crimean region of former Soviet Union in 1944 after Russian soldiers fell ill of a tick borne haemorrhagic fever. Same and similar disease was then found in different regions of the world, however, the causative agent, that is the Congo virus was not discovered till 1969 and was found identical to a virus identified in Belgian Congo, therefore in 1970 it was proposed that this disease should be called Crimean Haemorrhagic Fever-Congo Virus and was further simplified to Crimean-Congo Haemorrhagic Fever latter. This disease which has probably long existed before its recognition is now known to be endemic in Africa, the Balkans, Middle East and Asia<sup>4</sup>.

In Pakistan the first case was recognized in

alerts including 141 suspected and 49 laboratory confirmed human cases resulting in 16 deaths (CFR: 33%) were seen. Quetta, Zhob, Killa, Pishin and Musa Khel areas of Baluchistan are epidemiologically most affected areas followed by Multan, Mansehra, Karachi, Rawalpindi, Peshawar and Abbottabad<sup>3</sup>.

The only universally agreed upon treatment for CCHF is supportive therapy. Although World Health Organization (WHO) and National Institute of Health (NIH), Islamabad support administering Ribavarin to control the viral load in patients<sup>2,3</sup> the effectiveness of this drug is controversial. Many studies including meta-analysis, randomized control trials and review articles concluded that no statistically significant difference is seen in the outcome for the patients taking Ribavarin and those simply receiving supportive therapy<sup>5-8</sup>. According to WHO no safe and effective vaccine for widespread human use is currently available<sup>2</sup>. Keeping the high fatality rate and lack of availability of vaccine and widely accepted standard treatment protocol in mind it is important that all the resources should be focussed on preventing this disease and to ensure

**Table-1: General and demographic details of 150 butchers (n=150).**

Variable	Attribute	Numbers	Percentage
Sex	Males	150	100%
Area	22 Number Chungi	22	14.67%
	Qasaiee Chowk	128	85.33%
Deals in	Killed animals	19	12.67%
	Live and killed animals	131	87.33%
Education Level	No education	66	44%
	Primary education	65	43.3%
	Higher education	19	12.7%
Experience	<=5 Years	31	20.7%
	6 - 20 Years	97	64.7%
	21+	22	14.7%

1976 but the number of cases has shown a dramatic rise since 2000 with 50-60 cases being reported annually. June and October show peak incidence of cases but they occur throughout the year. The outbreaks are sporadic in nature and nosocomial outbreaks of CCHF have also been seen in Pakistan. During 2012, a total of 68 CCHF

the success of these preventive measures it is important that the public, especially the risk-groups are aware about the disease, the danger it possess and how to avoid it.

According to Department of Zoonotic and Vector Borne Diseases, Ministry of Health

Pakistan prevention has been divided into two levels, home community level and health care facilities level; both include prevention against tick bites, treatment of animals at entry points, personal protection care at home during Eid-ul-Azha, maintenance of isolation wards for patients. Guidelines dictate that only designated medical/paramedical staff should attend the patients after wearing the required PPE according to expected exposure. Specimens of blood or tissues taken for diagnostic purposes should be collected and handled using standard

fact that many butchers in a third world country like Pakistan are neither formally trained nor educated. It is important to know that how many butchers in Pakistan have some awareness about this potentially fatal disease and if so, are they taking any preventive measures against it? Although nationwide studies are required, however, areas like Rawalpindi which have recently seen a rising number of CCHF cases should also be focused. This study aims at providing this base line which is essential to devise strategies and make policies to create

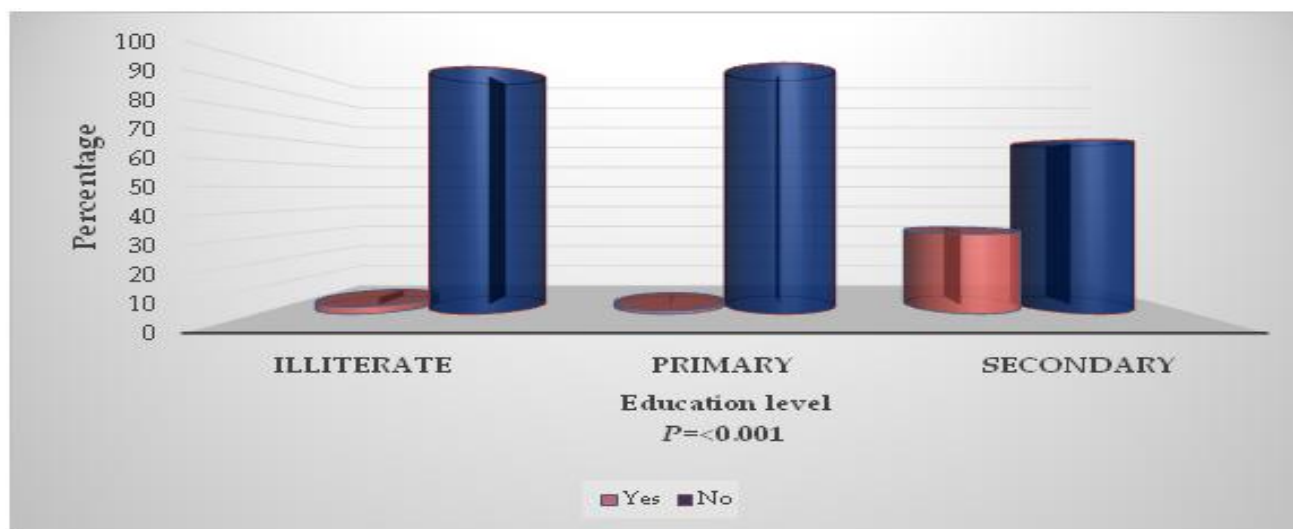


Figure-1: Did respondents from different education strata considered butchers more prone to get CCHF?

precautions. All instruments should be decontaminated and reprocessed before re-use. Contaminated needles and sharps should be disposed of immediately after use. All surfaces should be decontaminated with liquid bleach. In case of death of CCHF patients, family should be advised for safe burial practices. All healthcare workers who are exposed to potential CCHF infective sources should report exposure to the hospital administration. Blood sample should be sent to the NIH for testing<sup>9</sup>.

WHO has declared health care workers, farmers and butchers to be the most high risk groups for their constant exposure to the causative agent<sup>2</sup>. Butchers, being exposed daily to blood and infected tissue of domestic animals, definitely make a group of interest along with the

awareness in this risk-group and to ensure that protective measures are taken by butchers while working. Further this study also wishes to see if the level of formal education of butchers have any effect on their awareness and attitude and therefore suggest if education may play a protective role against CCHF.

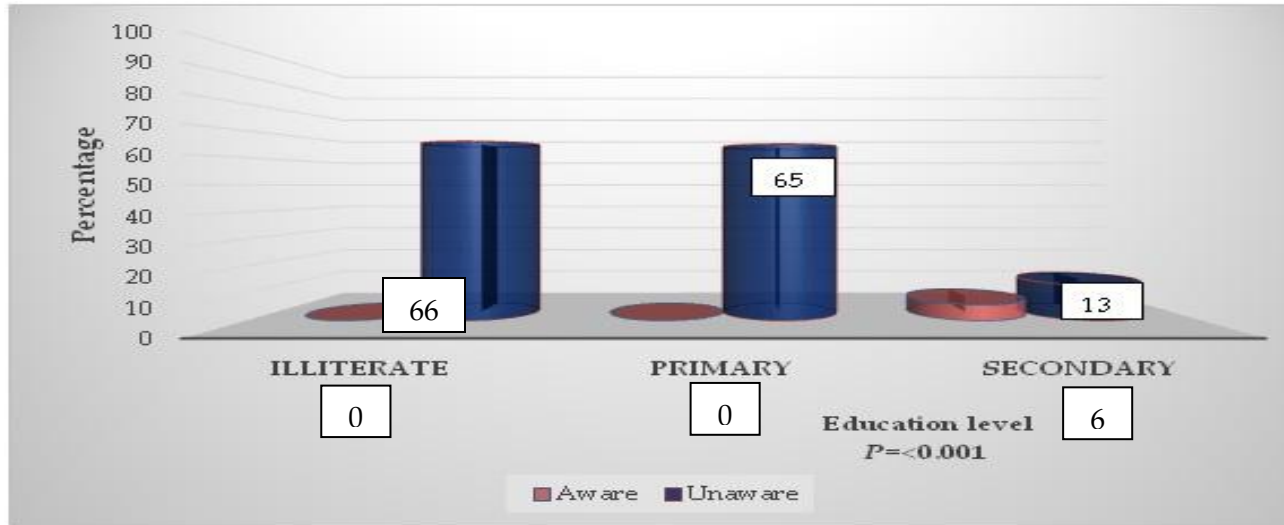
The objective of the study was to assess the level of awareness of butchers of Rawalpindi cantt regarding CCHF and to determine if education level has any impact on the level of awareness.

**MATERIAL AND METHODS**

A cross sectional survey was carried out on butchers working in ward 5 of Rawalpindi cantt from January to March 2015. Formal approval of

the ethics committee of Community Medicine Department of the Army Medical College was taken. Sample size of 150 was calculated using G-Power sample size calculator at 95% confidence level with an effect size of 0.38. Ward 5 of Rawalpindi Cantt was chosen through lottery

question long questionnaire was analysed and 7 questions were found to be directly related to awareness of the subject. Any person who could answer 3 or more questions correctly was considered aware and Pearson’s Chi-square test was used to determine association of education



**Figure-2: Association of awareness level of butchers and their education level.**

method and all available professional butchers in the main markets including Qasaiee Chowk and 22 Number Chungi of Tench Bhatta were interviewed with in formed consent. A pre-tested 14 items closed ended questionnaire was used and interview was carried out by a team of medical students who had been briefed about the details, aims and objectives of the study. Butchers were first informed that the research aimed at finding their level of awareness about certain diseases that might be transmitted through animal handling and how that can help them and the policy makers to ensure their safety. They were also assured that their identities will be kept strictly confidential. Any butcher actively involved in dealing with killed or live and killed animals both were interviewed where as those not willing to give consent or those only dealing with live animals were excluded from the research. Data was analysed using SPSS version 20.0. Descriptive statistics were used to describe age groups, experience and other demographic and general details of the subjects. The 20

level and awareness. A *p*-value of less than 0.05 was considered to be significant.

**RESULTS**

General and Demographic details of 150 (n=150) butchers interviewed are given in (table-1).

When asked about formal training none of the butchers had any, most were trained by senior butchers only. When asked if they believe that diseases could be transmitted through meat, 11(7.33%) answered positively, 9 (81.81%) out of these 11 had primary or secondary education, the *p*-value was 0.02. However when asked if they could differentiate between a sick and a healthy animal, 144 (96%) butchers claimed that they can. Results were however not that encouraging when asked about CCHF, only 14 (9.33%) had heard about the disease and 10 (71.42%) of these 14 had primary or secondary education, the *p*-value was 0.02. Only 4 (2.66%) butchers believed that CCHF can be transmitted through meat and blood of animals, 3 (75%) of them were educated. Figure-1

shows the results when subjects were asked if they believed that butchers were more prone to get CCHF.

None of the butchers knew any of the symptoms of CCHF, none of them knew any person who was diagnosed with CCHF and similarly none of them were taking any precautionary measures while dealing with blood and meat. However when asked if preventive measures should be taken, 27 (18%) replied in affirmative, 7 (25.9%) of these respondents had primary education while 17 (62.96%) had secondary education, *p*-value was found to be <0.001. Amongst the butchers who had heard about CCHF all had heard about it on television. Ten (6.67%) of the butchers said that government should play a role in creating awareness regarding CCHF. When awareness level was checked in the end, only six butchers could fulfil the criteria and were considered aware. Interestingly all 6 had secondary education. Figure-2 shows the association of education with awareness level that was found to be statistically significant with a *p*-value of <0.001.

## DISCUSSION

CCHF is a potentially fatal disease with fatality rate of as high as 50%<sup>3</sup>. WHO has declared health care workers, farmers and butchers to be the most high risk groups<sup>2</sup>. Extensive research regarding awareness and other aspects of CCHF in these risk groups in much deficient and the studies carried out usually focus on health care workers or general population. A study conducted in general population in Iran in 2012 found out that only 14.8% people had correct knowledge about CCHF and its transmission<sup>10</sup>.

On the contrary studies carried out in Turkey found awareness about CCHF to be high in health care workers. A study carried out in 2011-12 showed that 84.27% of physicians had theoretical knowledge regarding CCHF<sup>11</sup>, similarly a study carried out on nursing students found out that 81.7% correctly identified CCHF as a potentially fatal viral disease<sup>12</sup>. Another

study in Turkey found high level of awareness in medical personnel of endemic regions however only 61.1% doctors and 76.8% nurses used protective equipment while dealing with patients presenting with haemorrhagic diseases<sup>13</sup>.

In Pakistan the first case of CCHF was officially recorded in 1976 but according to the guidelines published by the National Institute of Health in collaboration with World Health Organization the number of cases has seen a steep rise since year 2000 with 50-60 cases being reported annually having a case fatality rate ranging from 2-50%<sup>3</sup>.

A study assessing the level of awareness of people of Karachi regarding CCHF found that the awareness was insufficient, although 60% of the respondents had an idea that CCHF was a viral disease there were variations in different educational strata with 71% of the educated and only 29% of the uneducated having some knowledge about CCHF<sup>14</sup>. This was seen in our study as well and both knowledge and attitude of the butchers with primary or secondary education was found to be better than those with no education.

Unfortunately no noteworthy study done on butchers could be found. A case series published in Iran in 2006 discovered that 25% of the cases admitted with CCHF were butchers and even rest had a history of contact with domestic animals<sup>15</sup>. In 2008 a case report was published in the international journal of infectious diseases when a butcher became the first confirmed case of CCHF in Abbotabad<sup>16</sup>. A study carried out in rural population of Balochistan found that none of the subjects had heard about CCHF, majority of them were involved in handling livestock<sup>17</sup>. An editorial written in the Journal of Research in Pharmacy Practice in 2015 emphasize on this very point and recommends awareness campaigns to be run to prevent further infections and deaths from this disease<sup>18</sup>.

An important finding of this study is that none of the butchers had any formal training which makes them less aware of the occupational



hazards that they face. However, it should be noted that his cross sectional study only focussed on the butchers of Rawalpindi cantt and the conclusion is not generalizable on all the butchers of Pakistan.

## CONCLUSION

This study concludes that the level of awareness regarding CCHF is insufficient in butchers of Rawalpindi cantt. However it is seen that both, the level of awareness and attitude improves significantly with increasing level of education. It is suggested that relevant authorities should carry out a nationwide survey and devise awareness strategies based on these conclusions.

## CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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