

Relation between Knowledge, Attitude and Practice of Hepatitis B among Dental Undergraduates in the Kingdom of Saudi Arabia

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ABSTRACT

Aim: Dental healthcare professionals are at a considerable risk of infectious diseases such as hepatitis B (HB). The study aims to present the details on the current knowledge, attitude, and practice of dental students towards HB in the Kingdom of Saudi Arabia.

Materials and methods: A cross-sectional study was designed targeting fifth academic year and 6th academic year dental students as well as dental interns. Knowledge, attitude, and practice of HB were checked using a self-reported questionnaire. Wherein, 11 questions were about knowledge, 6 about attitude, and the final 6 were on practice. Chi-square analysis was followed by Spearman's correlation to report on the relation between knowledge, attitude, and practice. SPSS version 24 was used for analyzing the data.

Results: The response rate was 87% of which, 41% were females, and 59% were males. It was seen that 61.3% of the respondents had good knowledge, 55% indicated a positive attitude, and 77% of them demonstrated safe practices. We also observed that the students or interns with good grade point average (GPA) had the strongest correlation ($r = 0.70$; $p < 0.001$) with their knowledge on HB. Knowledge was also significantly correlated with the attitude ($r = 0.373$, $p < 0.001$) and safe practices ($r = 0.11$, $p = 0.004$) of HB among the students and the interns.

Conclusion: Findings from the current research conclude that having good knowledge on HB accounts for a positive attitude and safe practices among undergraduate dental students.

Clinical significance: Potential oral health practitioners at dental schools should have a thorough knowledge of infectious diseases such as HB so that they implement safe practices from an early stage. The medical and dental curriculum should be reformed to include specific learning outcomes in every clinical course on stringent and effective ways to implement infection control practices.

Keywords: Attitude, Dentist, Hepatitis B, Knowledge, Practice.

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BACKGROUND

Hepatitis B is a disease or condition affecting the liver with the calculated global mortality rate of 6,00,000 per year.¹ People suffering from this deadly disease have inflamed liver leading to hampered overall body functions and eventually causing death. The symptoms are not known when newly infected, however, there can be acute illness with symptoms such as yellowing of skin and eyes, nausea, vomiting, and abdominal pain that could last for several weeks.² Recent publications reveal that over 2 billion people are suffering from this dreadful disease and nearly 350 million carriers of the virus.³ The estimated world prevalence of HB is ranging from 0.1% to 20%, between the lowest and the highest endemic areas.⁴ With the growing number of new cases, HB is now considered as a "disease of priority" by an updated report.⁵ Furthermore, countries that are part of the Asian continent, especially the ones in the middle eastern regions have been projected with a high prevalence ranging from 10 million to 15 million.⁶

Though the overall prevalence of HB is considerably low among males and females residing in Saudi Arabia, it is to be noted that this percentage is more among 18–21-year-olds and also comparatively rises among the people residing in rural regions of the country.^{7,8} It is of utmost importance that the populations, in general, should have a basic knowledge about HB, especially the ones who are at greater risk. Reports have previously shown that the knowledge of HB among people residing in different regions of the world is fairly low.^{9–13} Similar to this, a study conducted in Saudi Arabia has also

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revealed that a very smaller number of participants knew about HB and its prophylactic measures.⁸ Some findings from the northern and eastern regions of Saudi Arabia have also been reported, but there are no such reports from the southern province of Saudi Arabia, which is still developing and trying to align itself with the urban sections of this vast nation.

Similarly, health care practitioners are at a higher probability of contracting HB infection as they are in close proximity to infectious materials or sharp infected needles. This high risk of occupational exposure may affect the safety of the practitioners and questions the quality of care. Jazan University and King Khaled University are the largest free-oral-health service providers in the southern region

through their undergraduate and graduate students. Authors here propose that dental health care professionals (DHCP) learning and practicing in this developing region are at a considerably higher risk of infectious diseases such as HB; and it is extremely important that these DHCP should have sufficient knowledge, attitude and practice towards HB in order to prevent potential cross infections. Thus, the objective of this study is to present the details on the current knowledge, attitude, and practice of dental undergraduate students towards HB.

MATERIALS AND METHODS

Ethical Clearance

The current study was part of an internship completion project, hence approval from the research committee (dated: 08-08-2017) at the College of Dentistry, Jazan University was primarily sorted. Informed and signed consent from the study participants was also taken subsequently before administering the questionnaire.

Study Design and Subjects

A cross-sectional study was designed and conducted targeting all the 5th year and 6th year dental students as well as the dental interns of Jazan University and King Khaled University in Saudi Arabia. Targeted sample was 535 (*n*), and participation, in this study, was completely voluntary with no incentive given to any of the respondents.

Study Instrument and its Administration

A modified version of a previously designed questionnaire was used in order to measure the knowledge, attitude, and practice of the target population.¹⁴ This modified version had 23 questions wherein, 11 questions were about knowledge, 6 about attitude, and the final 6 on practice. Translation into Arabic was not performed as the medium of education at these universities is in English. But, the understandability of the questionnaire was checked in a pilot population of 20 students and 10 interns (*r* = 0.86).¹⁵

Students and interns were approached during their routine clinical sessions on separate days, as they were gender-segregated.

The data from the male participants was collected on the 28th of January 2018 and for the female participants on the 29th of January 2018. The responses were taken electronically using an iPad. This type of data collection method was adopted to increase the response rate, as most of the previous studies had a low response rate recorded if the instruments were emailed. In addition to this, data collection procedures in a similar situation or environment (clinical sessions) decreased the chances of other simultaneous influences to their responses. Good knowledge, attitude, and practice of the dental students and interns were considered if the aggregate score obtained was equal to or more than the median score.

Statistical Analyses

SPSS version 24 was used for analyzing the data. *p* value equal to or less than 0.05 was considered as significant. At first, descriptive analysis was performed, followed by normality tests. As the data were normally distributed, a Chi-square test was performed to see the association between independent and dependent variables (knowledge, attitude, and practice). Later spearman's correlation was checked to report on the relation between knowledge, attitude, and practice of HB among dental students and interns.

RESULTS

The response rate from the originally targeted population of 535, was 87% (*n* = 466), indicating that a fair number of dental students and interns agreed to respond to the questionnaire. Sociodemographic characteristics showed that 41% of the study population were females, and 59% were males. The age range was from 18 years to 26 years, with a mean age of 24 ± 0.1 years, and only 38% of the respondents were vaccinated (Table 1).

On identifying the knowledge, attitude, and practice of the respondents, it was seen that 61.3% of the respondents had good knowledge of HB (more than median), 55% indicated a positive attitude, and 77% of them demonstrated safe practices (Table 2). As high as 81% of the respondents were aware that carriers of the virus may also transmit the infection. 86.5% of the dental students

Table 1: Frequency distribution of hepatitis B knowledge, attitude and practice with regards to the assessed variables (*n* = 466)

Variables	Knowledge		Attitude		Practice	
	Good (61.3%)	Poor (38.7%)	Positive (55%)	Negative (45%)	Safe (77%)	Unsafe (33%)
Gender						
Male 275 (59%)	132 (48)	143 (52)	136 (49.2)	140 (50.8)	177 (64.5)	98 (35.5)
Female 191 (41%)	97 (51)	93 (49)	99 (51.8)	92 (48.2)	144 (75.5)	47 (24.5)
Level of education						
5th year 150 (32.2%)	71 (47.5)	79 (52.5)	76 (50.8)	74 (49.2)	100 (66.7)	50 (33.3)
6th year 160 (34.3%)	69 (43.2)	91 (56.8)	76 (47.6)	84 (52.4)	120 (75.2)	40 (24.8)
Intern 156 (34.5%)	87 (55.7)	69 (44.3)	88 (56.5)	68 (43.5)	129 (83.0)	26 (17.0)
Age group						
21–25 years 142 (30.5%)	70 (49.5)	72 (50.5)	73 (51.4)	69 (48.6)	65 (46.0)	77 (54.0)
26–30 years 324 (69.5%)	164 (50.5)	160 (49.5)	172 (53.0)	152 (47.0)	200 (61.8)	124 (38.2)
Periodic screening						
Yes 233 (50%)	177 (76.0)	56 (24)	156 (67.0)	77 (33.0)	161 (69.1)	72 (30.9)
No 233 (50%)	57 (24.4)	156 (66.6)	77 (33.0)	156 (67.0)	72 (30.9)	161 (69.1)
Vaccinated						
Yes 177 (38%)	117 (65.9)	60 (34.1)	110 (62.3)	67 (37.7)	113 (63.9)	64 (36.1)
No 289 (62%)	117 (40.7)	172 (59.3)	133 (46.2)	155 (53.8)	142 (49.3)	147 (50.7)

n (%) = frequency (percentage)

Table 2: Hepatitis B knowledge scores among undergraduate dental students

Knowledge items		n	%
Do you recollect the symptoms of HBV	Do not know	37	8.0
	No	77	16.5
	Yes	351	75.5
Do you know if HBV carriers can transmit infection	Do not know	37	8.0
	No	51	11.0
	Yes	377	81.0
Dentists at higher risk of HBV than general population	Do not know	28	6.0
	No	417	89.5
	Yes	21	4.5
An open wound/cut can transmit HBV	Do not know	28	6.0
	No	63	13.5
	Yes	375	80.5
Do you recollect the intervals for immunization of HBV	Do not know	9	2.0
	No	70	1.5
	Yes	450	96.5
An unsterilized syringe, needle or surgical instruments can transmit HBV	Do not know	19	4.0
	No	163	3.5
	Yes	431	92.5
HBV can be transmitted by unsafe sex	Do not know	256	5.5
	No	70	15.0
	Yes	370	79.5
Vaccine can prevent HBV infection	Do not know	14	3.0
	No	49	10.5
	Yes	403	86.5
A laboratory test is required in case of mishap	Do not know	21	4.5
	No	2	0.5
	Yes	443	95.0
HBV has post exposure prophylaxis	Do not know	126	27.0
	No	42	9.0
	Yes	298	64.0
HBV can be cured/treated	Do not know	86	18.5
	No	123	26.5
	Yes	256	55.0

n (%) = frequency (percentage)

and interns agreed that vaccination is an essential step towards the prevention of HB. On the contrary, it is to be noted that only half (50%) of the dental students and interns have undergone a periodic screening for HB (Table 1). With regards to the attitude, it was observed that around 80% and 90% of the undergraduate dental students HB affirmed that vaccine and following infection control guidelines, to be safe and effective ways towards preventing the potential transmission of infection, respectively (Table 3). About 50% of them did not feel comfortable treating patients with HB (Table 3). In terms of safe practices, it was seen that 66% were screened for HB at least once in their lifetime. Also, around 92% said that they would report if they ever had a needle injury; whereas, only 10% of the undergraduate students have reported that they had a needle stick injury at least once in their term (Table 4).

A positive correlation was seen among some combinations of variables. We observed that the students or interns with a good GPA had the strongest correlation ($r = 0.70$; $p < 0.001$) with their knowledge on HB. It was also seen that knowledge on HB was significantly correlated with the attitude ($r = 0.373$, $p < 0.001$) and

Table 3: Hepatitis B attitude scores among undergraduate dental students

Questions		n	%
I have no concern of being infected with HBV	Agree	93	20.0
	Disagree	280	60.0
	Do not know	93	20.0
HBV vaccine is safe and effective	Agree	375	80.5
	Disagree	42	9.0
	Do not know	49	10.5
Change of the gloves during blood collection is a waste of time	Agree	5	10.0
	Disagree	380	81.5
	Do not know	40	8.5
All patients should be tested for HBV before they receive health care	Agree	235	50.5
	Disagree	128	27.5
	Do not know	102	22.0
I do not feel comfortable to take care of people with HBV	Agree	233	50.0
	Disagree	233	50.0
	Do not know	0	0.0
Following infection control guidelines will protect me from being infected by HBV at work	Agree	419	90.0
	Disagree	0	0.0
	Do not know	47	10.0

n (%) = frequency (percentage)

safe practice ($r = 0.11$, $p = 0.004$) of HB among the students and the interns (Table 5).

DISCUSSION

This study was conducted to check the level of knowledge, attitude, and practice on HB that the dental students and interns of the southern region of Saudi Arabia possessed. We found out that the level of knowledge was good for almost all the respondents, and more than half had a positive attitude and good practices of preventing HB infection, respectively. Findings by Ahmad et al., from a university in Malaysia were in accordance with the current study.¹⁶ It was also seen that another recent study conducted by Alhowaish in 2017 among the DHCP of the Northern Border University in Saudi Arabia showed similar findings.¹⁷ However, we would like to reiterate that periodic screening of HB among the DHCP is a very important criterion towards prevention and early detection, and only half of the dental students and interns have reported having undergone this type of screening. This is in contrast to other universities in developed countries where it is mandatory that the students, interns, and other DCHP undergo routine screening for HB and other infectious diseases.^{16,18}

In this study, there were more male respondents in comparison to the female respondents, and this was due to the fact that the strength of male students in the 5th year and 6th year clinical sessions at the time of the study was a little more than the female students. Unsurprisingly, female students had a little more aggregate of knowledge, attitude, and practice scores than the male students, and this was directly correlated with their GPAs. This finding was in accordance with a study performed among a group of medical students in Pakistan¹⁹ by Khan et al. and also by Cheung et al. among Southeast Asians residing in Canada,²⁰ but a recent study performed by Ahmad et al. in Malaysia showed contrasting results.¹⁶

We also saw that the level of knowledge, attitude, and practice was on a lower side among the 5th year students, then increased among the 6th year students, and a high level of aggregate was seen

Table 4: Hepatitis B practice scores among undergraduate dental students

Questions		n	%
Have you ever screened for HBV	No	156	33.5
	Yes	310	66.5
I always change gloves for each patient during blood taking	No	21	4.5
	Yes	445	95.5
Have you ever had a needle prick injury	No	419	90.0
	Yes	46.6	10.0
I always report for needle prick injury	No	37	8.0
	Yes	429	92.0
Have you been vaccinated against HBV?	No	212	45.5
	Yes	301	64.5
How many doses of HBV vaccine did you receive	No dose received	177	38.5
	One dose	123	26.5
	Three doses	130	28.0
	Two doses	126	27.0

n (%) = frequency (percentage)

Table 5: Correlation between knowledge, attitude and practice among the undergraduate dental students

	GPA	Knowledge	Attitude	Practice
GPA	1	$r = 0.70$; $p < 0.001$	$r = 0.85$; $p < 0.05$	$r = 0.81$; $p < 0.05$
Knowledge		1	$r = 0.373$; $p < 0.001$	$r = 0.11$; $p = 0.004$
Attitude			1	$r = 0.71$; $p = 0.05$
Practice				1

r, coefficient of correlation

among the interns. This finding corroborates with other studies that intend to analyze the change in the level of knowledge, attitude, and practice with the level of education.^{16,18,21,22} The correlation between knowledge, attitude and practice among the participants provides an affirmation that having a good knowledge about a disease could surely improve the practices of prevention; and hence it is important that every clinical course taught at undergraduate level should extensively provide updated information on disease transmission and prevention measures in order to help in combating these infectious diseases among the most vulnerable set of populations such as the dental and other medical practitioners. This type of positive association between knowledge, attitude, and practice was also demonstrated by ul Haq et al., through their study conducted among a subset of Pakistanis.²³

Although the current study exhibits fairly important findings among a population of dental graduates, which have never been interviewed before on the topic of HB, the authors here would like to emphasize that these findings cannot be generalized even to the population of similar age in the region or the nation as a whole. The participants in this study are from a science background and have shown higher knowledge, attitude, and practices in terms of HB, whereas if a similar study is performed among the general population, then it may reveal significantly contrasting results. In conclusion, we state that the high level of knowledge, attitude, and practices among the undergraduate dentists of the southern region of Saudi Arabia should be considered as an asset towards a greater

goal of attaining a hundred percent compliance of infection efficient control practices. This could be achieved if schools graduating medical and dental practitioners reform their curriculum to include specific learning outcomes in every clinical course on stringent and effective ways to implement infection control practices. Finally, periodic screening of dental undergraduates should be a mandatory procedure inside the dental schools.

PUBLIC HEALTH SIGNIFICANCE

The government of Saudi Arabia has formulated a road map to 2030, and improving health by eliminating communicable diseases has been prioritized. Prevention of such diseases should be worked upon horizontally and vertically, and this type of approach will only be effective if the future oral health care providers are well aware and trained to combat communicable diseases. Findings from the current study suggest an important link between knowledge, attitude, and practice. Thus, effective public health strategies need to be implemented that enhance the knowledge on HB among the community in general and health care providers in specific.

AUTHOR'S CONTRIBUTIONS

Manal GY Mubarak initiated the idea of the current study. Mir FA Quadri designed and implemented the study. Shatha A Alamir, Mosaab MM Qahal, and Omar HA Alamir did the data collection, follow-up, and the data entry for the current study. Finally, Mir FA Quadri completed the analysis, followed by the drafting of the manuscript.

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QUESTIONNAIRE USED



بسم الله الرحمن الرحيم

التهاب الكبد الوبائي هو عدوى فيروسية يمكن أن تهدد حياة المصاب بها , بحيث تؤثر على الكبد وتسبب الضرر في خلاياه , ويشمل هذا الالتهاب مشكلة صحية عالمية بارزة . ويمكن أن يسبب عدوى مزمنة وأن يعرض الناس لخطر الوفاة فهو يعد من أهم الأمراض سهلة الإنتشار في عيادات طب الأسنان.

مشارككم في هذا البحث و دعمكم له بالإجابة على الأسئلة المرفقة في هذا الإستبان سيكون له أهمية كبيرة في الوصول للأهداف المرجوة بإذن الله وهي أيضا دليل و حكم الكبير بأهمية دوركم في خدمة مجتمعكم .

المعلومات الشخصية :

العمر :

الجنس :

السنة الدراسية :

Hepatitis is a viral infection that can threaten the patient's life, so that affects the liver and cause damage in cells, and this includes inflammation prominent global health problem. It can cause chronic infection, and to expose people to the risk of death, it is one of the most important diseases, easily spread in dental clinics.

Your participation in this research and support him to answer the questions attached to this questioner would have great importance in reaching the desired targets, God willing, and is also evidence of the great consciousness of the importance of your role in your community service.

Personal information

Age

Gender

Academic year

(Knowledge)

What are the sources of your information about hepatitis (A–B–C–D)?

- (A) Periphery (such as friends and neighbors)
- (B) School or university
- (C) Media

Do you agree that dental students have sufficient information on hepatitis?

- (A) Yes
- (B) No
- (C) I do not know

Have you heard about hepatitis before?

- (A) Yes
- (B) No
- (C) I do not know

Hepatitis is an infectious disease that spreads through virus?

- (A) Yes
- (B) No
- (C) I do not know

The appearance of the symptoms of the disease is immediately after infection?

- (A) Yes
- (B) No
- (C) I do not know

Prominent clinical feature of hepatitis B:

- (A) Fever
- (B) Jaundice
- (C) Nausea

HBV infection transmitted by:

- (A) Parenteral-sexual and perinatal only
- (B) Contaminated water/food prepared by person
- (C) Both

What is ideal age of vaccination:

- (A) Infancy
- (B) Adulthood
- (C) I do not know

There is a vaccine for hepatitis B?

- (A) Yes
- (B) No
- (C) I do not know

Are you vaccinated against hepatitis B?

- (A) Yes
- (B) No
- (C) I do not know

The immunization doses are taken at intervals of:

- (A) 0, 1, 6 months
- (B) 0, 1, 3, 6 months
- (C) I do not know

Dose a positive (HbsAg) indicate that person is diseased and infective?

- (A) Yes
- (B) No
- (C) I do not know

Dentists are at higher risk of HBV infection than the general population?

- (A) Yes
- (B) No
- (C) I do not know

Is hepatitis B transmitted through tattoo or acupuncture needles?

- (A) Yes
- (B) No
- (C) I do not know

In health care professionals, can hepatitis B be transmitted through blood splashing into mucous membranes of the eye or mouth?

- (A) Yes
- (B) No
- (C) I do not know

Should individuals with hepatitis B or C infection receive dental treatment in hospital?

- (A) Yes
- (B) No
- (C) I do not know

Are you aware of the first aid treatment in case of accidental exposure to hepatitis B?

- (A) Yes
- (B) No
- (C) I do not know

Do you know the precautionary measures to be taken against hepatitis B in your routine practice?

- (A) Yes
- (B) No
- (C) I do not know

Would you have joined this profession after knowing the potential risk of exposure to hepatitis B?

- (A) Yes
- (B) No
- (C) I do not know

After patient treatment procedure, materials which have contact with body fluids and blood must be chucked to medical waste?

- (A) Yes
- (B) No
- (C) I do not know

Patient contaminated with HBV must be called as the last patient?

- (A) Yes
- (B) No
- (C) I do not know

Serological tests should be made after vaccination for the control of immunity?

- (A) Yes
- (B) No
- (C) I do not know

Do you believe needle stick injury from hepatitis patient is highly contagious?

- (A) Yes
- (B) No
- (C) I do not know

HBV patient should be treatment separately in clinic?

- (A) Yes
- (B) No
- (C) I do not know

How strong in your personal worry about the risk of being infected by HBV

- (A) Strong
- (B) Moderate
- (C) Low

(Attitude)

"I have moral responsibility to treat patients with HBV infection"

- (A) Agree/strongly agree
- (B) Neutral
- (C) Disagree/strongly disagree

"I will treat patients with HBV infection"

- (A) Agree/strongly agree
- (B) Neutral
- (C) Disagree/strongly disagree

"I can safely treat patients with HBV infection"

- (A) Agree/strongly agree
- (B) Neutral
- (C) Disagree/strongly disagree

"I will let dentists treating patients with HBV treat my teeth"

- (A) Agree/strongly agree
- (B) Neutral
- (C) Disagree/strongly disagree

Dentists have rights to know their patients' HBV infection status

- (A) Agree/strongly agree
- (B) Neutral
- (C) Disagree/strongly disagree

"I am worry about being infected with HBV by my patients"

- (A) Agree/strongly agree
- (B) Neutral
- (C) Disagree/strongly disagree

What is the reason behind not being vaccinated?

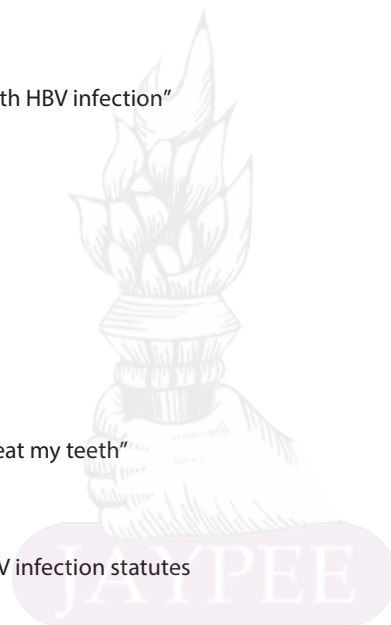
- (A) Lack of motivation
- (B) No need felt
- (C) I'm vaccinated

What would be your reaction if you were found patient have HB?

- (A) Don't have responsibility to treat
- (B) Treat in hospital
- (C) Treat in separately in clinic
- (D) Treat as last patient

In case you are exposed to cough with blood infected with hepatitis B, how would you consider serological test?

- (A) Not really important
- (B) Ask to take vaccination
- (C) Confirm with test initially



(Practice)

The first action to be taken after needle stick injury is

- (A) Washing with soap under running water.
- (B) Calling for emergency services
- (C) Getting the blood test done

How many doses of HBV vaccine did you receive?

- (A) One dose
- (B) Two doses
- (C) Three doses

In case you are exposed to infected blood with hepatitis B, would you take vaccinations instead of confirming with serological test?

- (A) Yes
- (B) No
- (C) I do not know

In case you are diagnosed with hepatitis B, do you avoid meeting with people?

- (A) Yes
- (B) No
- (C) I do not know

HBV transmission from dentist to patient can be prevent with use of gloves?

- (A) Yes
- (B) No
- (C) I do not know

Do you have to change gloves with all patients?

- (A) Yes
- (B) No
- (C) I do not know

When exposure to blood stop on skin or eye do you take vaccine for protection?

- (A) Yes
- (B) No
- (C) I do not know

In your daily clinical practice do you always use facemask?

- (A) Yes
- (B) No
- (C) Sometime

In your daily clinical practice do you always use gloves?

- (A) Yes
- (B) No
- (C) I do not know

Have you received the hepatitis B vaccine before?

- (A) Yes
- (B) No
- (C) I do not know

If yes, how many shots did you receive?

- (A) 1
- (B) 2
- (C) 3

