Knowledge and Practices of Barbers Regarding Hepatitis C Virus in El-Behira Governorate

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Abstract: **Hepatitis C virus (HCV) is a global epidemic disease worldwide. Egypt has the highest prevalence in the world. Knowledge and practice of barbers about HCV is a vital issue for preventing transmission among customers as razor sharing and shaving in barber's shops have been identified as key risk factors for the spread of HCV. This study aims to: assess Knowledge and practices of barbers regarding hepatitis C virus in EL-Behira governorate. Research design: A Cross sectional descriptive research design was utilized. Subjects: A convenient sample of 305 barbers were recruited from Damanhour, Kom Hamada Itay-Elbaroud, Kafr-Eldawar barber's shops Tools of data collection: two tools were used tool 1: Barber's HCV knowledge structured interview questionnaires .Tool 2: Barber's HCV practices observational checklist . Result: More than half (55%) of the study subject's had fair knowledge and only (13%) of them had good knowledge, the mean score percent of total HCV knowledge among the studied subjects was 55.5±16.2. and the mean score percent of total practice score was30.9±13.2 Conclusion: The majority of the studied subject's had poor practices and fair knowledge about HCV. Therefore improving knowledge and practices of barbers regarding HCV should be considered to ensure customer's health safety and decrease risk of transmission. Recommendation: A policy by government to check accountability of safe practicing like use of sterilized instruments, use of new disposable blades for each customer, use of antiseptic, cleanliness, and self-hygiene should be done. Also, Vaccination status and screening of barbers for hepatitis B and C should also be considered before issuance of license and registration.**

Keywords: **HCV, Barbers, Knowledge, Practices.**

1. INTRODUCTION

Hepatitis C virus (HCV) is one of the most common viral hepatitis that affects the liver. It is a contagious liver disease causes both acute and chronic hepatitis ranging in severity from a mild illness lasting a few weeks to serious and lifelong illness.(WHO,2014,WHO,2020,ECDC,2017)[1,2,3]. HCV usually knowing as silent epidemic because of its asymptomatic nature in most cases as the majority of infected people are not aware of their status until they have clinical symptoms of cirrhosis or liver cancer many years later.(ECDC,2017, Petruzziello A,Marigliano S, 2016) [3,4]. HCV is a major public health crisis where its seroprevalence had an estimated 2.8% increase over the last decade that affects approximately 170–200 million individuals globally, with 3-4 million new infections occurring annually.(Ibrahim E,Madian A 2011)[5]

HCV is considering a major public health burden in Egypt, which consider one of the endemic diseases in Egypt. This wide spread infection was due to implementation of mass population anti-schistosomal treatment using of tartar emetic injection from 1950s to 1980s without aseptic techniques .It was reported in 2008 that Egypt has the highest prevalence of

HCV in the world estimated at 14.7%compared to 10% in 2015 according to Egypt demographic health survey .(Omran D, Alboraie M 2018, Kwo PY 2020, Abdel wahed A,Habiba A 2018)[6,7,8]

HCV is the most common blood borne pathogen and the most common modes of infection are through exposure to blood,from unsafe injection, transfusion of unscreened blood and blood products,from dental treatment, reuse of razors by barbers and rarely sexual practices that lead to exposure(WHO,2020) [9].Razor sharing and shaving in barber's shops have been identified as key risk factors for the spread of HCV .Micro-trauma induced during shaving can contaminate the razor and reuse of an infected one razor for another client may result in the transmission of HCV.Furthermore, the likelihood of transmission increases with the frequency of reuse of razors and blades. (ShahidA,NasimsS 2013)[10] Negligence during the use of sharp instruments may be a risk factor for blood borne infections causing serious health problems for both the barber and the clients (Mutocheluh M,2015)[11]

Community health nurse plays an important role in preventing HCV through playing various roles. As health educator he/she can provide health education to barbers about risks associated with un safe practices, importance of disinfection of their instruments that may help in reducing the burden of community acquired infection with HCV(Manzoor I, Ilyas U,2017)[12]. Also the nurse can impact public health through improving their knowledge about HCVand increase their awarness regarding prevention,early detection and treatment of HCV to minimize HCV transmission in the community (Poll R,2009)[13]

Significance of the study

Egypt has the largest proportion of HCV infection worldwide according to 100 million health campaign of the ministry of health initiative in October 2018 aimed to screen more than 52 million citizens for HCV, the prevalence of HCV in EL-Behira governorate 136,873 consequently barbers at risk group for HCV. There is an urgent need to increase their awareness about HCV to avoid the risk of transmission by sharing non sterile sharp object. Moreover, it is important to know how barbers perceive the risks in relation to prevention of transmission between themselves and customers. (Dallak A, AL-Rabeei,2012, Sultan NA, Mayet YA, Alageel SA, Al-omarHA,2018) [14,15]

This study aims to:

Assess Knowledge and practices of barbers regarding hepatitis C virus in EL-Behira governorate.

Research question

What are the Knowledge and practices of barbers regarding hepatitis C virus in EL-Behira governorate?

Research design:

A cross sectional descriptive design was used to conduct this study.

Setting:

The study was conducted in the barbers' shops in four districts in El-Behiera governorate namely Damanhour, KomHamada, Itay-Elbaroud and Kafr-Eldawar .

- Subjects:

A convenient sample of 305 barbers was chosen from the previous mentioned settings for conducting this study.

sample size:

The sample size calculated by using Epi-info 7 software program base on the total population size of the barber shops in the four districts (1458), expected frequency 50%, acceptable error 5% and Confidence co-efficiency 95%.

Tools of the study: Two tools were used for data collection based on reviewing the related literature.

Tool (1): Barber's HCV knowledge structured interview questionnaires:

It was developed by Makhejaja K,Abro A 2010,S Shalaby S, Kabbash I.2010, Abbasi I , Fatmi Z.2014, Aziz S,Atif I 2016[16-19]. It includes three parts. **Part (1):** Demographic characteristics including: age, place of residence (urban, rural), level of education and marital status.

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Part (2): Past health History: This part included past medical history as diabetes mellitus, hypertension and respiratory disease, past health history of surgical procedure, Previous dental procedure, blood transfusion, laboratory investigation for detecting HCV virus and exposure to any sharps of shaving tool and intervention taken after this exposure.

Part (3): Barber's HCV Knowledge: This part was used to assess barber's knowledge regarding HCV. It consisted of four sections with 51 multiple choice questions. The response to these questions was Zero for no or don't know, one for yes with maximum score (102). Total score of knowledge were (poor= score <50% ,Fair knowledge= score 50-75 %, Good knowledge = score > 75%).

Tool (2): Barber's HCV practices observational checklist:

It was developed by Makhejaja K,Abro A 2010,S Shalaby S, Kabbash I.2010, Abbasi I , Fatmi Z.2014, Aziz S,Atif I 2016[16-19]. It used to record the observed practices of barbers during shaving. It consisted of 11 statements .The response for each statement was one for done or yes and zero for not done or no with maximum score 11. Total score of practice were (poor= score <50%, Fair practice= score 50-75 %, Good practice= score > 75%).

Method:

The study was implemented according to the following steps:

- Approval of responsible authorities was obtained through official letters from the Faculty of Nursing.

- Meetings were held with directors of each city council of the selected settings to clarify the purpose of the study and to gain their cooperation and facilitate the execution of the study in the selected settings.

- Meeting was held with each barber individually to collect the required data regarding their HCV knowledge and observing shaving practice after explanation of the purpose of the study.

- The content validity of the tools was tested by juries of (5) experts in the field. Their suggestions and recommendations were taken into consideration.

- Cronbach Alpha Coefficient was used to ascertain the reliability of both tools.Tool (I) translated into Arabic language.

- Pilot study was carried out on 30 barber who were randomly and not included in the sample in order to ascertain the comprehension, clarity and applicability of the tools and estimate the time required for the interview. Based on the obtained results, the necessary modifications were done.

- Data was collected by the researchers during the period from the first of September 2020 to the first of January 2021(12 weeks).

- **Ethical considerations:**

▪ Informed consents were obtained from the study subjects after brief explanation of the purpose and nature of the research.

▪ The anonymity and confidentiality of responses, voluntary participation and right to refuse to participate in the study were emphasized to studied subject's. The researcher explained the objectives of the study to the participants.

- **Statistical analysis:**

After data were collected, they were coded and transferred into specially designed formats so as to be suitable for computer feeding. Following data entry, checking and verification processes were carried out to avoid any errors during data entry, frequency analysis, cross tabulation and manual revision were all used to detect any errors. The statistical package for social sciences (SPSS version 25) was utilized for both data presentation and statistical analysis of the results. The level of significance selected for this study was P equal to or less than 0.05.

2. RESULTS

Table (1) presents, the distribution of the study subject's according to their demographic characteristics. Regarding their age, more than one third (36.7 %) of the studied subject's aged from 20 years to less than 30 years while, the lowest (7.2%)of them were in the age of 50 years or more with mean age 31.3±10.4 . With respect to educational qualifications, more

than two fifths (42.0 %) of the studied subject's had diploma degree and less than one tenth of them (5. 6%) were illiterate.

Concerning place of residence, more than three quarters (76.7%) of the studied subject's were from rural areas compared to 23.3% of them were from urban areas.

Furthermore, the table reveals that nearly half of the studied subject's (49.8%) were married. On the other hand less than half (45.6%) of them were single and the rest were divorced or widow.

Table (1): Distribution of the study subject's according to their demographic characteristics

Demographic data	No. (305)	%
Age		
20-	40	13.1
-30-	112	36.7
-40-	74	24.3
≥50-	79	25.9
Mean±SD	31.3±10.4	
Min-Max	15-58	
Level of education		
Illiterate	17	5.6
Presecondary education	44	14.4
Secondary education	75	18.7
Diploma	128	42.0
University	59	19.3
Marital status		
Married	152	49.8
Single	139	45.6
Divorced	5	1.6
Widow	9	3.0
Place of residence		
Urban	71	23.3
Rural	234	76.7

Table (2) shows distribution of the study subject's according to their past health. It was noticed that the majority (87.2%) of the studied subject's weren't undergone any previous surgery. While Less than two third (63.9%) of the studied subject's performed dental procedure and more than two third (69.8%) of them were exposed to blood transfusion.

Table (2): Distribution of the study subject's according to their past health history

Health history	No. (305)	%
Previous surgical operation		
No	266	87.2
Yes	39	12.8
Type of surgical operation ≠	**n.39**	
Appendectomy	24	61.5
Cholecystectomy	8	20.5
Others	7	17.9
Chronic diseases		
No	229	75.1
Yes	76	24.9
Type of chronic disease ≠	**n. 76**	
Respiratory disease	6	7.9
Hypertension and heart disease	17	22.4
GIT disease	17	22.4
Endocrine disease (DM)	13	17.1
Others	23	30.2

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Previous dental procedure		
Yes	195	63.9
No	77	25.2
Don't remember	33	10.8
Previous blood transfusion		
No	213	69.8
Yes	85	27.9
Don't remember	7	2.3
Test for HCV		
Yes	158	51.8
No	137	44.9
Don't remember	10	3.3
Result of HCV test	**n. 158**	
Negative	138	87.3
Positive	20	12.7
Exposure to any sharp shaving tool		
No	272	89.2
Yes	21	6.9
Don't remember	12	3.9
Action taken after sharp shaving tool	**n.21**	
Nothing	14	66.7
Cleaning and disinfection	4	19
Perform lab investigation	3	14.3

Table (3) shows the distribution of the study subject's according to their HCV preventive practices with customers .It was revealed from the table that, None of the studied subject's change apron ,none of them had and use safety box for used instruments in shaving ,the majority of them (80%,98.7%) not use disposal gloves or mask and also not use hand disinfectant between each customer respectively. While the majority (99.7%) of the studied subject's use a new razor for each customer.

Table (3): Distribution of the study subject's according to their HCV preventive practices with customers

Practices #	Not done		Done	
	No.	**%**	**No.**	**%**
Change apron	305	100.0	0	0.0
Disinfect surfaces if contaminated with blood	303	99.3	2	.7
Presence and use of sterilization unit for used tools	297	97.4	8	2.6
Boiling all used tools every day	273	89.5	32	10.5
Wearing disposal gloves, mask	244	80.0	61	20.0
Hand washing between each customer	232	76.1	73	23.9
Presence and use of separate tool kit for every customer	210	68.9	95	31.1
Changes the towels between each customer	149	48.9	156	51.1
Using hand disinfectant	4	1.3	301	98.7
Uses a new razor for each customer	1	.3	304	99.7
Presence and use of safe box	100.0	305	0.0	0

More than answer

Table (4) shows association between the study subject's total knowledge score level and their demographic characteristics. It was noticed that there was a statistical significance association between age, level of education, marital status ,place of residence and their total knowledge score level where p value =0.001, 0.47, 0.001and 0 .010) respectively.

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Table (4) Association between the study subject's total knowledge score level and their demographic characteristics

Demographic data	Total Knowledge score level								Test of sig.
	Poor		Fair		Good		Total		
	No.	%	No.	%	No.	%	No.	%	
Age									FET: 27.163 P:0.001*
20-	15	37.5%	23	57.5%	2	5.0%	40	100.0%	
-30-	50	44.6%	57	50.9%	5	4.5%	112	100.0%	
-40-	15	20.3%	43	58.1%	16	21.6%	74	100.0%	
≥50-	19	24.1	44	55.7	16	20.3	79	100.0%	
Level of education									FET: 12.509 P:0.047*
Illiterate	6	35.3%	9	52.9%	2	11.8%	17	100.0%	
Presecondary education	14	31.8%	21	47.7%	9	20.5%	44	100.0%	
Secondary/diploma education	69	37.3%	98	53.0%	18	9.7%	185	100.0%	
University	10	16.9%	39	66.1%	10	16.9%	59	100.0%	
Marital status									FET: 24.754 P:<0.001*
Married	36	23.7%	87	57.2%	29	19.1%	152	100.0%	
Single	56	40.3%	76	54.7%	7	5.0%	139	100.0%	
Divorced	3	60.0%	2	40.0%	0	0.0%	5	100.0%	
Widow	4	44.4%	2	22.2%	3	33.3%	9	100.0%	
Place of residence									X^2: 9.171 P:0.010*
Urban	15	21.1%	50	70.4%	6	8.5%	71	100.0%	
Rural	84	35.9%	117	50.0%	33	14.1%	234	100.0%	

X^2:Chi-square test   FET: Fisher Exact Test

P: P value of test of significance   *Significance at p ≤0.05

Figure (1) demonstrates the distribution of the study subject's according to their level of knowledge total score. It shows that more than half (55%) of the study subject's had fair knowledge and only (13%) of them had good knowledge.

Figure (1) Distribution of the study subject's according to their level of knowledge total score
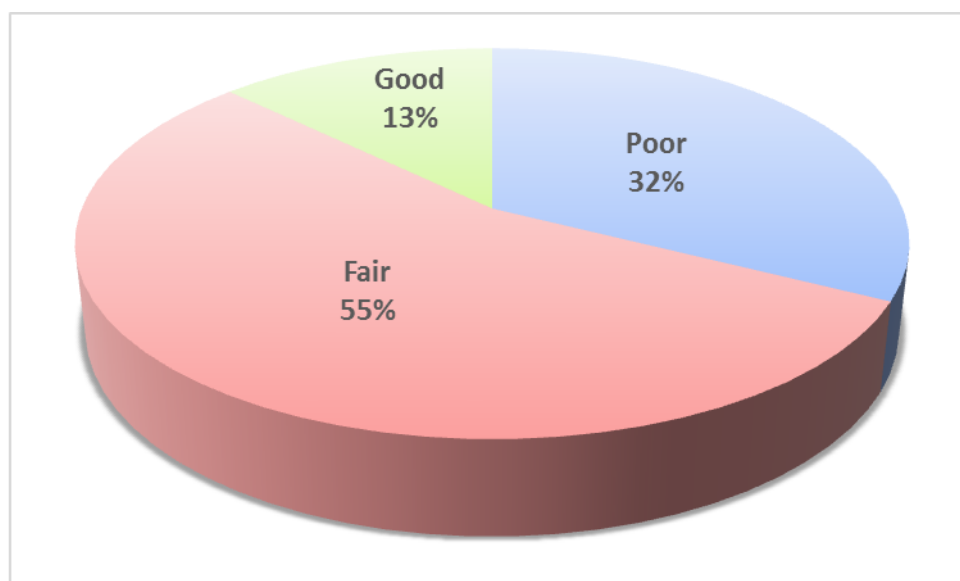
Figure (2) demonstrates the distribution of the study subject's according to their level of practice HCV preventive measures total score. The figure shows that the majority (86%) of the study subject's had poor practice, while only (14%) of them had fair practice.

Figure (2) Distribution of the study subject's according to their level of practice HCV preventive measures total score
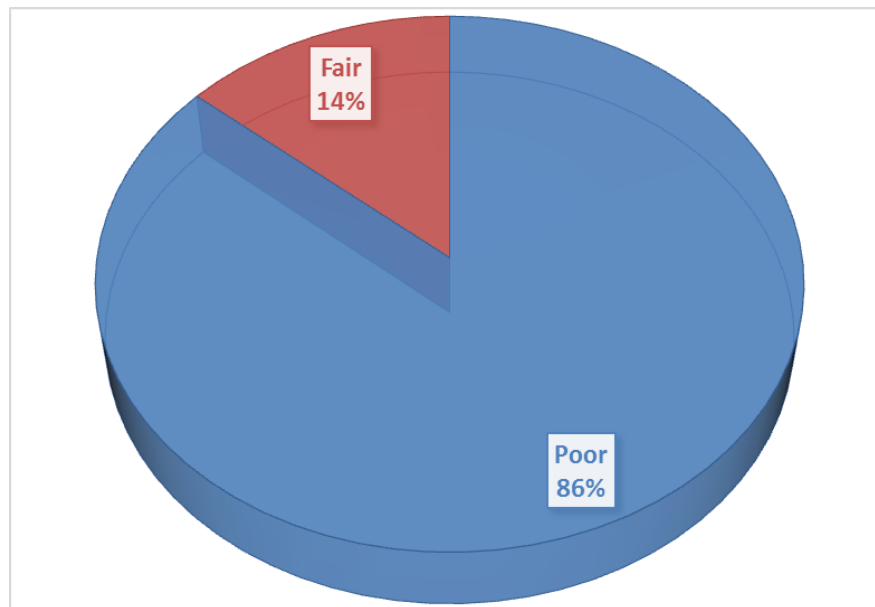
Table (5) show association between the study subject's total practice score level and their demographic characteristics, It was noticed that that there was no a statistical significance association between age, level of education, marital status ,place of residence and total practice score level where p value=0.816 **,** 0.327 **,** 0.150 **,** 0.631 respectively.

Table (5) Association between the study subject's total practice score level and their demographic characteristics

Demographic characteristics	Total Practice score level						Test of sig.
	Poor		Fair		Total1		
	No.	%	No.	%	No.	%	
Age							
20-	33	82.5%	7	17.5%	40	100.0%	
-30-	98	87.5%	14	12.5%	112	100.0%	FET:1.561
-40-	63	85.1%	11	14.9%	74	100.0%	P:0.816
≥50-	69	87.3	10	12.7	79	100.0%	
Level of education							
Illiterate	13	76.5%	4	23.5%	17	100.0%	
Presecondary education	41	93.2%	3	6.8%	44	100.0%	FET: 3.436
Secondary/diploma	159	85.9%	26	14.1%	185	100.0%	P:0.327
University	50	84.7%	9	15.3%	59	100.0%	
Marital status							
Married	125	82.2%	27	17.8%	152	100.0%	
Single	124	89.2%	15	10.8%	139	100.0%	FET: 5.315
Divorced	5	100.0%	0	0.0%	5	100.0%	P:0.150
Widow	9	100.0%	0	0.0%	9	100.0%	
Place of residence							
Urban	60	84.5%	11	15.5%	71	100.0%	X^2: 0.231
Rural	203	86.8%	31	13.2%	234	100.0%	P:0.631

X^2:Chi-square test   FET: Fisher Exact Test

P:P value of test of significance   *Significance at p ≤0.05

3. DISCUSSION

Hepatitis C infection (HCV) is a serious public health problem that is mainly transmited through blood transfusion, needle stick injury, medical and dental procedure, injection drug use and sharing contaminated materials like razors and shaving kits (El lassy R,Moustafa A,2019, Samo A. A, Laghari Z. A, Baig N. M, etal,2020) [20,21]. Approximately 3% of the world's population infected with HCV. Egypt has the highest and devastating prevalence of HCV in the world, amounting to 14-20% in 15-59 year age group,10% chronic infection and 90% genotype 4.(Beltagy DM,Khedr YI,Sakr A,2020, Coppola N,Pascalis Sde,2016, Salem ML,Zidan A,Senna M,2013) [22,23,24]

Barbers are occupationally predisposed to HCV infection as they handle sharp instruments such as razors, clippers and hairpins which can accidentally penetrate the skin. Unsafe workplaces, improper disinfection of instruments, inadequate wound care and negligence during the use of sharp instruments like blades, scissors, nail files and contaminated towels by barbers make themselves and their clients more vulnerable for HCV.(Mutocheluh M,Kwarteng K,2015, Hussain I,Bilal K,2018, Roy S, Dasgupta A, Bhattacharyya M,etal,2021) [11,25,26]

Concerning educational level, the findings of the current study showed that more than two fifths of the studied subject's had diploma degree . These findings agreed with a study conducted in Gharbia governorate by Shalaby and Kabbash 2010 who found that, more than two fifths of the participants had intermediate education. This could be justified by the majority of middle-educated people in Egypt work in crafts moreover, the majority of the study subject living in rural areas and people living in rural prefer working than education.

The current study portrayed that the majority of the studied subject's weren't have previous surgery and more than three-quarters of them did not suffer from chronic disease. While less than two-third of the studied subject's performed dental procedures. Moreover, more than two-thirds of them were exposed to blood transfusion.

These results was supported by a study conducted in Assuit by Abdelrahim et al 2015 who found that the majority of the participants were not have surgery.These results were disagreed with Saha and Alam study 2020 in Bangladesh who reported that the majority of studied sample never received blood transfusion. This may be due to the majority of the study subject's aged from 20 years to less than 30 years and this age group are not high risk for chronic diseases.

The study results showed ,none of the studied subject's change apron ,none of them had and use safety box for used instruments in shaving ,the majority of them (80%,98.7%) not use disposal gloves or mask and also not use hand disinfectant between each customer respectively. the majority of the study subject's had poor practice and only 14% of them had fair practice. This could be justified by high cost of disinfictant solution and also barbers belived that preventive practice during shaving not important and the most important thing was only changing razor or blades after every customer and the majority of barbers belived that equipment used in shaving not need boiling or sterilizing.

These findings go in the same line with a study conducted in Port Said by Hassan ,et al 2020 who illustrated that ,the majority of the study group had unsatisfactory practice during pre-guidelines while majority of them had satisfactory practice during post-test phase.

The result of the current study revealed, that there is a significance association between study subject's total knowledge score level and their age, level of education and place of residence. This result could be attributed to aging contributes greatly to the individuals experience with knowledge of disease and by increasing age they had more chance to get more information .Also higher educational level of them and may be due to urban study subjects gained knowledge mostly from internet, newspaper and television as compared to study subject in rural areas where main sources to gain knowledge were radio and TV.

This result was agreed with a study conducted in Mosul City by Mohmood and Hassan ,2018 who illustrated that their was a significant relationship between participants demographic data and their knowledge.

The finding of the current study showed that, more than half of the study subject's had fair knowledge regarding HCV. These findings were congruent with a study executed in the north-west part of Bangladesh by Sarkar, et al 2021 who reported that the majority of the studied sample had insufficient knowledge regarding HCV. This could be justified by the vital role of awareness campaigns from national institutions, family medicine units and the one hundred million health campaign to eradicate virus C. Also this may be due to mass media awareness role through television, radio and internet

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and increasing barbers' knowledge to be at risk for blood born infections, especially HCV or may be due to partially of the studied subject was highlly educated.

The study results showed that the majority of the study subject's had poor practice and only 14% of them had fair practice during shaving and hair cutting practices for customers.These findings were congruent with another study conducted in Bangladesh by Mohsin, et al 2019 who illustrated similar results that no respondent cleans their hand before providing service to each customer and none used clean towel for each customer rather one towel for every 10-12 customer.

 The present study revealed that there was no significance association between study subject's total practice level and their age, level of education and place of residence. This could be justified by lower educational level of the study subject and high cost of disinfictant solution.

These findings was agreed with that reported by another study conducted in Egypt by Fikry, et al 2015 who illustrated that ,there was no statistically significant relation between patient preventive practices and either their place of residence or educational level.

4. CONCLUSION

Based upon the findings of the current study, it could be concluded that more than half of the study subject's had fair knowledge and majority of the study subject's had poor practice about HCV infection**.** So improving knowledge and practices of barbers regarding HCV should be considered to ensure customers' health safety.

5. RECOMMENDATIONS

1. launching a national health education and behavior change campaigning are required for barbers about HCV safety measures prevention and infection control.Thus barbers might even be trained to act as community hepatitis educators for their unique access to the general male

2. Ongoing training and retraining programs for barbers regarding the methods of prevention of infectious diseases such as HCV&HBV to maintain their safety first and second for the general population.

3. Screening of all barbers for hepatitis C & B periodically on annual basis with cost-effectively andproperly vaccinated should be considered before issuance of license and registration.

4. Preparing & in service training for barbers should be accessible for free, scope of immunizations with nonstop supervision for universal precautions and offering emphasis for a new barbers orientation about job-related blood borne virus by national authority

REFERENCES

[1] World Health Organization (WHO). Guidelines for the screening, care and treatment of persons with hepatitis C infection.2014 (Cited 2020 May 15).Available at: http://apps.who.int

[2] World Health Organization (WHO) Hepatitis c fact sheet 2020. (Cited 2020Feb12). Available from:http:// apps.who.int.iris .

[3] European Center for Disease prevention and control (ECDC).Facts about hepatitis C 2017(cited 2018 April). Available at:ecdc.europa.eu/en/hepatitis –C /facts

[4] Petruzziello A,Marigliano S. Global epidemiology of hepatitis C virus infection: an up-date of the distribution and circulation of hepatitis C virus genotypes.world journal of Gastroenterology 2016;22(34):7824-7840.DOI:10.3748/ wjg.v22i34.7824.

[5] Ibrahim E, Madian A. Impact of hepatitis C on health related quality of life in Egypt. Journal of American science 2011;7(11).Available at: http://www.american science.org.

[6] Omran D, Alboraie M. Towards hepatitis C virus elimination: Egyptian experience, achievements and limitations. world journal of gastroenterology 2018;24(38):4330-4340.Doi:10.3748/wjg.v24.i38.433.

[7] Kwo PY.HCV treatment in 2020: How to translate highly effective therapies into elimination strategies. hepatology forum 2020;2:72-74.DOI: 10.14744/hf.2020.2020.0009.

[8] Abdel wahed A, Habiba A. Knowledge and attitude of 2nd year nursing students about hepatitis C virus in technical health institute. Zagazig nursing journal 2018;14(1).

[9] World Health Organization (WHO) Hepatitis c fact sheet 2020. (Cited 2020Feb12). Available from:http:// apps.who.int.iris.

[10] ShahidA,NasimsS.insight and educational intervention concerning hepatitis among roadside barbers and their clients in Karachi,Pakistan.j infect devctries2013;7(2):125-129.Availablefrom:http://cms.galenas.com.tr.

[11] Mutocheluh M, Knowledge and occupational hazards of barbers in the transmission of hepatitis B and C was low in Kumasi, Ghana.Pan African Medical Journal 2015; 20(260).DOI: 10.11604/pamj.2015.20.260.4138

[12] Manzoor I, Ilyas U. Awareness and practice of safety measures related to Transmission of hepatitis B & C among Barbers and Saloon workers of Lahore, Pakistan.International Journal of Community Health and medical research 2017;3(2):84-91.Available at:https//researchgate.net

[13] Poll R.The role of the community nurse in hepatitis C diagnosis and treatment. British Journal of Community Nursing 2009; 14(7) 292 – 296. Available from:http://www.internurse.com.

[14] Dallak A, AL-Rabeei N, AL-Thaifani A.Knowledge, attitude and practice of barbers regarding hepatitis B and C viral infection in Sana's city, Yemen. Journal community health 2012;37:935-939.DOI:10.1007/S10900-011-9535-7

[15] Sultan NA, Mayet YA, Alageel SA, Al-omarHA.Assessing the level of knowledge and available source of information about hepatitis c infection among HCV infected Egyptians. Bmc public health 2018;18-747.(DOI: 10.1186/s12889-01889-018-5672-6).

[16] Makhejaja K,Abro A.Sero-prevalence of hepatitis C antibodies in the people visiting road side barbers .Pakistan journal of medical science 2010;26:(402-406).Available at :http://vlibrary.emro.who.int/imemr.

[17] Shalaby S, Kabbash I.Hepatitis B and C viral infection: prevalence, knowledge, attitude and practice among barbers and clients in Gharbia Governorate, Egypt. Eastern Meditrerranean Health Journal 2008;16(1):10-17.Doi:10. 26719/2010.16.1.10 .

[18] Abbasi I , Fatmi Z.Prevalence of hepatitis B virus infection among barbers and their knowledge, attitude and practices in the district of Sukkur, Sindh.International journal of occupational medicine 2014;27(5):757–765.DOI: https://doi.org/10.2478/s13382-014-0299-z.

[19] Aziz S,Atif I.Knowledge ,attitude and practice of barbers about hepatitis B and C transmission in islambad.Jiimc journal 2016;11(3).Available at:https://pubmed.ncbi.nlm.nih.gov.

[20] El lassy R,Moustafa A.Impact of interactive digital –based hepatitis C education on self-management and quality of life damanhour university students having hepatitis C .journal of health ,medicine and nursing2019;66.DOI: 10.7176/JHMN

[21] Samo A. A, Laghari Z. A, Baig N. M, etal. Prevalence and Risk Factors Associated with Hepatitis B and C in Nawabshah, Sindh. The American Journal of Tropical Medicine and Hygiene 2020;104(3):1101-1105.DOI:https:// doi.org/10.4269/atmh.20-1228.

[22] Beltagy DM,Khedr YI,Sakr A. Diagnostic and prognostic roles of miRNA and dielectric parameters in HCV Egyptian patients .Journal of Applied Pharmaceutical Science 2020;10(09):115-121.DOI: 10.7324/JAPS.2020.10914 ISSN 2231-3354

[23] Coppola N,Pascalis Sde.Hepatitis B virus and hepatitis C virus infection in health care workers .World journal of Hepatology 2016;8(5):273-281.DOI:10.4254/wjh.v8.15.273.

[24] Salem ML,Zidan A,Senna M.Frequencies of circulating myeloid derived suppressor cells and dendritic cells in Egyptian patients with chronic Hepatitis C Virus infection undergoing treatment with IFN-a-based therapy. Journal for immunotherapy of cancer 2013;1(1).Available at:http://www.immunotherapy of cancer.org/content/1/s1/p248.

[25] Hussain I,Bilal K.Knowledge and Practices regarding Hepatitis B Virus Infection and its Prevalence among Barbers of Rural Area of Rahim Yar Khan.journal of jszmc 2018;9(2).Available at:www.researchgat.net

[26] Roy S, Dasgupta A, Bhattacharyya M,etal. Hazardous practices related to blood borne viral infection transmission among male barbers: A study in a rural area of West Bengal. Indian Journal of Public Health 2021; 65(1): 22-27. DOI:10.4103/ijph.IJPH-87-20.

[27] Abdelrahim S,MohamedM,AhmedS.Seroprevalence,knowledge,attitude and practices among barbers and their customers regarding HCV and HBV in Assiut district,Egypt.Journal of nursing and health science 2015;4(2):19-30.DOI:10.9790/1959-04311930.

[28] Saha M, Alam M. J, Ahmed M. U, Rahman M. A, Chowdhury M. K. S, Rahman, M. O, Safwath S. A.). Knowledge, Attitude and Practice about Hepatitis B, Hepatitis C and Human Immunodeficiency Virus among Barbers of Sylhet, Bangladesh. Medicine Today 2020; 32(2), 117-121. DOI:10.3329/medtoday.v32i2.48827.

[29] Amitabh B,Anthony D. A Public Health Approach to Hepatitis C Control in Low- and Middle-Income Countries. Journal of PMC2015; 12(3).Doi: 10.1371/journal.pmed.1001795.

[30] Mahmood H. J, Hassan E. T. (2018). Assessment Barbers Knowledge's and Practice's About Hepatitis Virus In Mosul City. Mosul Journal of Nursing 2018;6(1): 34-40.DOI:10.33899/min.2018.160080.

[31] Eltayeb NH. Knowledge and practice of barbers regarding transmission of blood born viruses in Khartoum state. Article in Annals of tropical medicine and public health 2013;6(1):883(DOI: 10.4103/1755-6783.115201).

[32] Mohsin M, Munir A. M. (2019). Workplace Hygiene Practice among Saloon Workers in Bangladesh .Army Journal of Armed Forces Medical College, Bangladesh 2019; 15(1), 79-80.

[33] Fikry FE,Ahmed M.Preventive practices adopted by hepatitis C patients in Alexandria-Egypt.Life science journal 2015;12(6)Available at:http//www.life sciencesite.com.