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IMPACT OF PUBLIC HEALTH AWARENESS ON PREVENTIVE AND CURATIVE HEALTHCARE

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ABSTRACT

The aim of this study was to find the relationship among public health awareness, preventive health and curative healthcare. Survey approach was used, and data was collected by distributing questionnaires. Total 200 questionnaires were distributed, and 169 completed questionnaires were received and used in analysis of data. Exploratory factor analysis and reliability analysis were run. Correlation and regression analysis were used to test hypotheses. T-test was used to find the mean difference. SPSS 25 and AMOS-SEM 18 were used for analysis. Structural model was developed and validated in the study. Factor loadings of EFA and confirmatory factor analysis CFA are also reported. It is found that all the variables are related with each other significantly and public health awareness predicted preventive and curative health significantly. T-test results are also reported there is difference in mean score of literate and illiterate employees. It is concluded that health awareness has significant impact on preventive and curative health. Preventive health is found more dominant than curative health in the structural model. It means that preventive health is more important and curative health is overlooked so there is need to give attention to curative health in further studies. This study is primary study on public health awareness in Qassim region.

Contribution/ Originality: The study contributes to the existing literature by finding the relationship among public health awareness, preventive health and curative healthcare.

1. INTRODUCTION

In public health administration, the question of what type and volume of health-related information is needed by citizens "to navigate their lives in the challenging conditions of the 21st century", with regard to healthcare facilities and services [1]. Print and electronic media can be used to launch health awareness programs and give healthcare messages. Awareness about public heath can be given to society through education and for this purpose use of E-technology is very beneficial. Because if society is educated then they can take care of themselves [2, 3].

In 1978, Pakistan became signatory to World Health Organization's (WHO) Alma-Ata Declaration, which defined the target for 'Health for All' by the Year 2000 [4]. One of the five principles of Alma-Ata focus on disease prevention, health promotion, and curative and rehabilitative services. These policies did not appear in Pakistan until 1990 when Pakistan Government unveiled its ever first National Health Policy [5]. This policy focused on school health services; control of communicable diseases; nutrition programs; family planning; malaria control programs; sanitation and safe drinking water [6].

2nd National Health Policy, 1997 [7] was introduced focusing on health promotion and 'health education.' The health promotion focused on 'health education' and 5 principles of Ottawa Charter [8] as a guiding framework [6]. Then came National Health Policy 2001 [9] wherein plan was "to create mass awareness in public health matters" using "multimedia to disseminate information [6]." The emphasis was on disseminating preventive information on healthy practices including treating drinking water, washing hand and sanitation [10].

Awareness about public health can be given to school, college and universities students through nongovernment sector organizations and also private sector can play their role to spread awareness in society. Save the children and Procter & Gamble Pakistan constructed one hundred sanitation facilities in Pakistan to raise awareness [10, 11].

Pakistan developed Health Monitoring Information System (HMIS) in 1992 funded by USAID, however, it should be noted that our system for public health surveillance is still weak and incompetent provide required data for informed decisions about public health [1]. Researchers conducted intervention at a BHU to watch public sector worker absenteeism using smart phone technology thereby virtually increasing the inspections of clinics. Health sector may sue this technology to monitor their employees [12].

This paper is an effort to highlight the need for public health awareness with a view to help public health sector in implementing health related programs with the support and understanding of the general public. Educated and well-informed citizens respond more powerfully to the public health initiatives by extending full cooperation through their awareness about the sensitivity of the health issues and the efforts made by the government to handle those issues effectively. It is well-established that public health awareness affects preventive healthcare campaigns positively making the people able to control health issues before they strike them. Likewise, informed citizens are better position to handle curative healthcare and thereby assist public health sector to work effectively in cooperation with community.

2. LITERATURE REVIEW

2.1. Public Health Awareness

Prevention is better than cure is commonly understood reality and every rational citizen knows that if measures are taken at the environmental hygiene and food levels (preventive healthcare), the vulnerability to diseases is reduced to maximum extent. In advanced countries, citizens are bombarded with updated healthcare information to keep their preventive level of healthcare updated in terms of awareness. In developing countries like Pakistan where health related facilities and services are very limited and poor in quality [11] the tool of public awareness about their healthcare measures and issues can help a lot in better handling health of the nation [13].

At the moment mass media and more widely, the social media has become most powerful tool in disseminating health-related information to all types of stakeholders including children to adults and old-age citizens simultaneously [2]. According to WHO reports, Pakistan is one of developing country and Pakistan is very backward in term of health and human development index. Average life of Pakistani is less than Japan i.e. 64.5 years while in Japan it is 83 years (a developed country) [14].

The 'community needs' must be unfolded through involving the community in the process. If communities are given the ownership of their healthcare, they can successfully surface their health needs thereby improving their health status [11]. Healthcare delivery models, based on community needs based are best for financial acceptability and sustainability [15]. In order to solve this problem public private partnership is effective tool suggested by Qidwai [3].

2.2. Preventive Healthcare

The most effective and what characterizes advanced healthcare systems of the world, is the maximum public health awareness before the diseases strike the society at the preventive levels of healthcare both in terms of food

management and preventive vaccinations [16]. An educated and civilized member of society can better take care of his family himself. Sri Lanka is far better than Pakistan in terms of Health indicators, human development index and life expectancy is more than Pakistan i.e. 72 years Pakistan can take benefit from experience of Sri Lanka [3].

2.3. Curative Healthcare

As far as curative healthcare is concerned, the community should be aware of all the healthcare facilities available at the primary, secondary and tertiary levels in the area. Public awareness about hospitals, clinics, medical stores, and patient help centers along with contact information so that health related help should be sought as quickly as possible in the moments of emergency. Likewise, public awareness is also needed and continuously updated about the medicines, drugs sold in the markets [6]. Measures must be taken by the public health authorities display latest information on the drugs commonly available in the market through print media, social media, Bill-boards in public places, educational institutions and markets of consumer products [2].

Availability of healthcare facilities and services at the primary level are more critical and need to be robust alongside maximum and updated awareness of general public regarding the facilities and schedules of healthcare services [1]. Pakistan has started hiring lady health workers LHWs and up till now one hundred and three thousand LHWs are hired and working in different areas of Pakistan. Seventy six percent of population is covered by LHWs. But due to high level of absenteeism and inadequate supple of medicine patients denied preventive and curative healthcare. LHWs need monitoring and evaluation for proper working in their respective areas [10, 17] on basis of above literature following theoretical framework and variables are extracted Figure 1 theoretical framework.
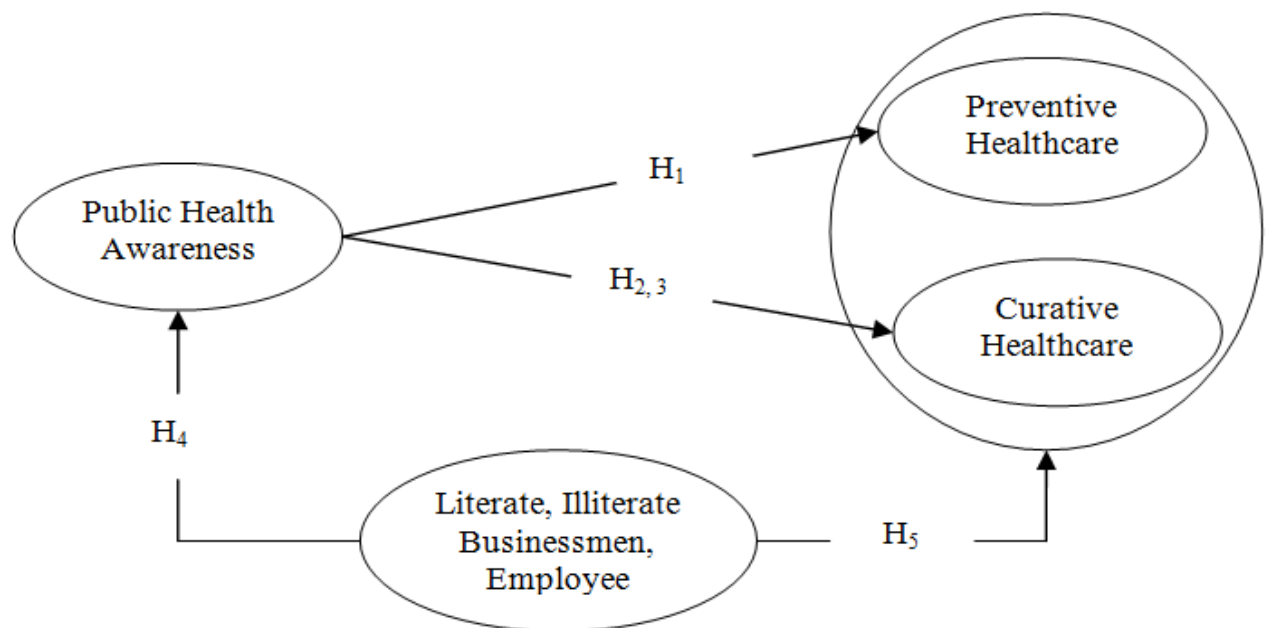

Figure-1. Theoretical framework.

Source: WHO [14].

2.4. Research Design

2.4.1. Research Philosophy

The research methods and techniques of any research project depend on the philosophy of theory of research being followed. The theory of research is about the 'beliefs' of the researcher about 'knowledge' and 'the way it is acquired, recorded and communicated.' In social sciences, 'Positivism' is a popular philosophy which suggests that knowledge is what is 'verifiable' through observations and sensory data and it is recorded and communicated

through objectively explicit methods and procedures. The researcher therefore extracted the model from existing knowledge and then verified through field survey.

2.5. Population and Sampling Techniques

Population of this study was consisting of total 200 individuals from Qassim College of public health and college of business administration. Among 200 169 completed questionnaires were used in analysis. Nonprobability and convenience sampling techniques was used. Yamane formula was used for calculating sampling size. Error rate was 5% and confidence level was 95% in that formula.

2.6. Data Collection Instruments

All the instruments of this study are adopted from previous studies conducted on public health care, awareness and curative health care. All the items were measured on five-point Likert scale ranging from 1 to 5. 1 for strongly disagree and 5 for strongly agree. Public health awareness has nine items, while preventive healthcare has also nine items, but curative health care has eight items.

2.7. Data Analysis Techniques

AMOS-SEM and SPSS version 21 was used for analysis of data. All the data was entered in SPSS and descriptive and inferential statistics was used. First of all, reliability of instruments was checked through the cronbach alpha. And validity of the scales was used by exploratory factor analysis. Moreover, mean standard deviation was used. And correlation analysis and regression analysis were used for testing hypotheses.

Table-1. Reliability.

No.	Construct	Items	Alpha
1	Public health awareness	9	0.966
2	Preventive healthcare	9	0.762
3	Curative healthcare	8	0.925
4	Total	26	0.718

Source: SPSS 25(statistical program for services solutions).

Cronbach alpha was used for checking the reliability of the instruments and also internal consistency of the items. Value of reliability of scale depends upon value of alpha level. Range of alpha level is between 0-1. If the alpha value is 0.4 it is not acceptable, if it is 0.5 it is poor, if value of alpha is 0.6 it is questionable, if the value of alpha is 0.7 it is acceptable and alpha value 0.8 and above is considered very good and value of 0.9 and above is excellent [18]. In study Table 1 Cronbach alpha value for public health awareness is 0.966, while for preventive healthcare is 0.762, alpha value for curative healthcare is 0.925 and overall alpha value for scale is 0.718. These values are above the standard criteria i.e. 0.7 so all the instruments of this study are reliable.

Further internal consistency of the items was checked through ITC i.e. item total correlation. Cut off level for ITC values is 0.4. if any item less than 0.4 ITC value may be deleted from the analysis. But as it is clear from alpha values that cronbach alpha is meeting the standard criteria so there is no need to delete any item from analysis, so it means all ITC values are greater than 0.4.

2.8. Validity

The Kaiser-Meyer-Olkin [KMO] is the measure of sampling adequacy, which varies between 0 and 1. The values closer to 1 are better and the value of 0.6 is the suggested minimum. The Bartlett's test of sphericity is the test for null hypothesis that the correlation matrix has an identity matrix. Taking this into consideration, these tests provide the minimum standard to proceed for Factor Analysis. Normally, $0 < KMO < 1$; If $KMO > 0.5$, the

sample is adequate. The p-value (Sig.) of .000 < 0.05, therefore the Factor Analysis is valid. Each factor is constituted of all those variables that have factor loadings greater than 0.4.

Table-2. Factor analysis (PHA).

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy.		.923
Bartlett's test of sphericity	Approx. chi-square	1928.909
	df	36
	Sig.	.000

Source: SPSS 25(statistical program for services solutions).

In Table 2 sampling adequacy is cheeked through KMO =0.923>0.5 so our sample size is adequate, BTS = 1928.909, p=0.000 <0.05 so it means that researcher can proceed to factor rotation.

Table-3. Items loadings.

No	Item statements	Loadings
1	I know about common diseases.	.963
2	I know about seasonal health problems.	.814
3	I know where to go for healthcare.	.861
4	I read and learn about health issues.	.897
5	I watch TV programs on health tips.	.884
6	Healthcare is a top issue for me.	.923
7	Updated health-related information is shared in family.	.862
8	Our parents keep close watch on health conditions of family.	.933

Source: SPSS 25(statistical program for services solutions).

Table 3 show factor loadings of items. There are eight items of public health awareness. And factor loadings of all items is higher than 0.4 so there are no items problematic so these items are retained for public health awareness and instrument of PHA is validated on eight items. Factor loadings of five items are given in Table 3 which is above 0.4.

Table-4. Factor analysis (PHC).

KMO and Bartlett's test		Values
Kaiser-Meyer-Olkin measure of sampling adequacy.		.758
Bartlett's test of sphericity	Approx. chi-square	541.623
	df	36
	Sig.	.000

Source: SPSS 25(statistical program for services solutions).

Table 4 shows KMO vale for preventive healthcare i.e. KMO=0.758 and BTS = 541.623, p=0.000<0.05 it means that sample size is adequate researcher can move for rotation.

Table-5. Component matrix.

No	Item statements	Factor loadings
1	Prevention is better than cure.	.923
2	I like healthcare through food management.	.862
3	I do all possible to maintain status quo of my good health.	.963
4	Exercise is must for preventing from health problems.	.474
5	We make maximum use of vegetables to escape diseases.	.566
6	I always read about updates on preventive healthcare tips.	.605
7	Prevention is less expensive than cure.	.749
8	Preventive healthcare keeps one away from bad health worries.	.769
9	Prevention is personal duty but cure is public activity.	.737

Source: SPSS 25(statistical program for services solutions).

Principal component analysis and orthogonal method was used for rotation. Orthogonal method is used when researcher does not want items to correlate with each other. So rotated factor solution of this PHC shows one factor with seven items. All items have loadings higher than 0.4 and Table 5 shows the final factor loadings of those factors which are retained for preventive healthcare.

Table-6. Factor analysis (CHC).

KMO and Bartlett's test		Values
Kaiser-Meyer-Olkin measure of sampling adequacy.		.890
Bartlett's test of sphericity	Approx. chi-square	1246.763
	df	28
	Sig.	.000

Source: SPSS 25(statistical program for services solutions).

Table 6 shows KMO= 0.890, BTS= 1246.763, p=0.000<0.05. This means that sample size for this variable curative healthcare is adequate.

Table-7. Item loadings.

No	Item statements	Factors loading
1	I know about the clinics.	.975
2	I know a number of doctors for different treatments.	.579
3	I know enough about the medicine for different health issues.	.748
4	I visit doctors for check-up regularly.	.733
5	I always keep commonly used medicine with me.	.754
6	I take medicine as per doctor's prescription.	.910
7	I use any medicine available for a disease.	.935
8	I instantly visit clinic/doctor as I have health issue.	.837

Source: SPSS 25(statistical program for services solutions).

Table 7 shows items and their loadings. It can be seen that all the items have factor loadings greater than 0.4 ranging from 0.579 to 0.975. No item was deleted from analysis. Also, there is one factor after rotation retained after using orthogonal method for rotation.

2.9. Descriptive Statistics

Table-8. Occupation/literacy cross-tabulation.

Variables		Literacy		Total
		Literate	Illiterate	
Occupation	Employee	48	40	88
	Businessman	31	50	81
Total		79	90	169

Source: SPSS 25(statistical program for services solutions).

It is shown in Table 8 that there are total 169 respondents. Data was collected from two groups those respondents which are employee somewhere in organizations and they have two categories literate and illiterate and also data was collected from literate businessmen and illiterate businessmen. There are total 48 respondents which are literate and employee somewhere in different organizations while 40 employees were illiterate. Further analysis revealed that 31 participants were literate businessmen and 50 were illiterate who participated in this study.

Table-9. Descriptive statistics.

Variables	n	Minimum	Maximum	Mean	Std. deviation
Public health awareness	169	1.00	5.00	3.5431	.80182
Preventive healthcare	169	1.00	5.00	3.0493	.42619
Curative healthcare	169	1.00	5.00	2.7648	.81716

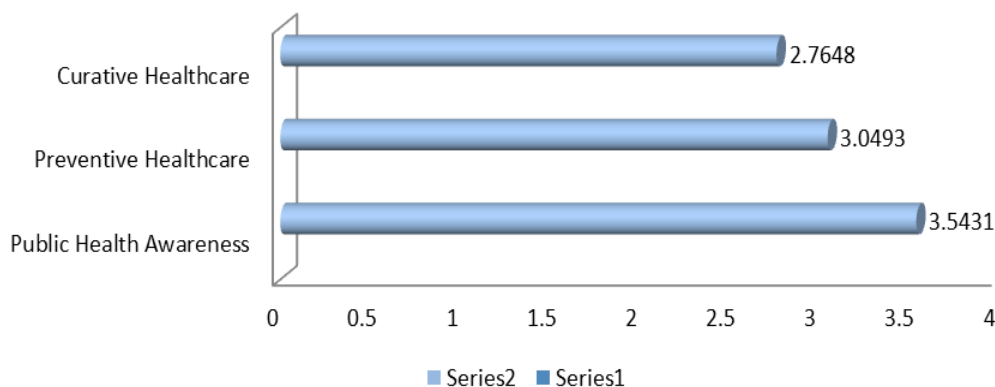**Source:** SPSS 25(statistical program for services solutions).

Figure-2. Mean scores.
Source: Figure 2: Mean Scores is taken from Excel by adding mean values given in Table 9.

From Table 9; Figure 2 shows mean scores of public health awareness PHC, preventive healthcare PHC and curative healthcare i.e. CHC. It is shown that mean score of PHA $M_{PHA}=3.5431$, $S.D_{PHA}=0.80182$, mean score of preventive healthcare is $M_{PHC}=3.0493$, $S.D_{PHC}=0.426$, further analysis of results explained that mean score of $M_{CHC}=2.7648$, $S.D_{CHC}=0.81716$, it means that awareness has highest mean score value followed by preventive healthcare but lowest value of mean is recorded by curative healthcare. So more focus must be given to curative healthcare. Further standard deviation of public health awareness and curative healthcare are near to each other means that respondents and their responses have homogeneity among these two variables but not for preventive healthcare.

H₁: PHA is significantly associated with PHC & CHC.

Table-10. Correlations (n=169).

Variables		Public health awareness	PHC
Preventive healthcare	Pearson correlation	.735**	
	Sig. (2-tailed)	.000	
Curative healthcare	Pearson correlation	.657**	.455**
	Sig. (2-tailed)	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed).
SPSS 25(Statistical Program for services solutions).

Bivariate correlation was used to test hypotheses 1. Table 10 explains relationship between public health awareness and preventive healthcare is r=0.735, p<0.05, is positive and significant. It means that when increase in awareness will increase preventive healthcare. Similarly, relationship between public health awareness and curative healthcare is r=0.657, p<0.05 and relationship between preventive healthcare and curative healthcare is 0.455, p<0.05, is positive and significant it means that when awareness will increase in public about health it would increase in curative healthcare. So, all the relationships are significant so H1 is accepted.

H₂: PHA significantly (positively) predicts PHC.

Table-11. Model summary.

Model	R	R square	Adjusted R square	Std. error of the estimate	F	Sig.
1	.735a	.541	.538	.28970	196.598	.000b

a. Predictors: (Constant), PHA.
a. Dependent Variable: PHC.
SPSS 25(Statistical Program for services solutions).

Table-12. Coefficients.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	1.665	.101		16.441	.000
	Public health awareness	.391	.028	.735	14.021	.000

Source: SPSS 25(Statistical Program for services solutions).

The results from the above Tables 11 portrays that PHA significantly positively predict the PHC with R Square =0.541 at .000 level of significance and F =196.598. This shows significant variation by the predictor in the criterion variables i.e. 54%. Likewise, Beta value for public health awareness is also in the acceptable high range β=0.735 Table 12 coefficients. Since there is powerful R²in predicting the criterion variables, which implies it is playing significant role therefore, the hypothesis 2 is substantiated and accepted.

H_3: PHA significantly predicts CHC.

Table-13. Model summary.

Model	R	R square	Adjusted R square	Std. error of the estimate	F	Sig.
1	.657[a]	.431	.428	.61819	126.550	.000[b]

a. Predictors: (Constant), PHA.
a. Dependent variable: CHC.

Table-14. Coefficients.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	5.136	.216		23.771	.000
	Public health awareness	-.669	.059	-.657	-11.249	.000

Source: SPSS 25(Statistical Program for services solutions).

The above Table 13 give information for the hypothesis No. 3, we can see R² of 0.431 means that this predictor also explain 43% of the variance in the dependent variable of CHC and it is significant with p-value of 0.000. Thus, we accept our proposed hypothesis 3 that PHA significantly positively predicts CHC, therefore, we accept our proposed hypothesis. Beta value for curative health is B=-0.657, p<0.01 Table 14 coefficients.
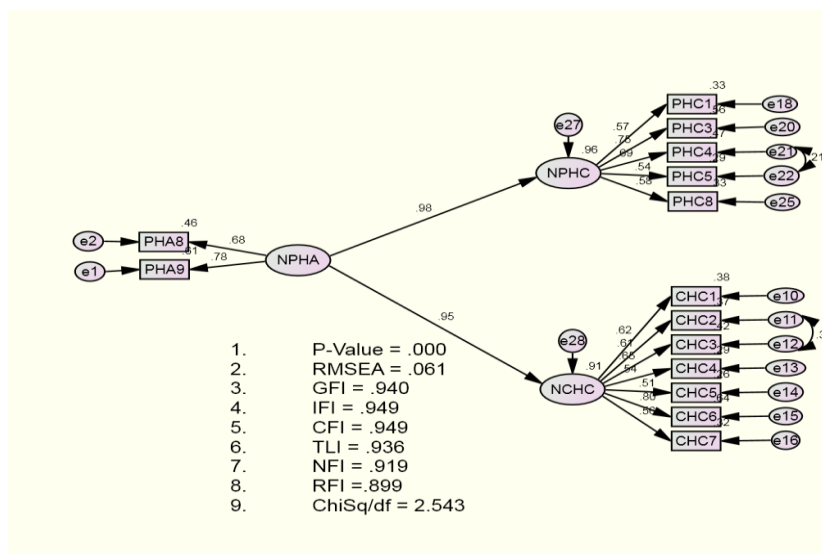

Figure-3. Structurla model AMOS-SEM (analysis of moment structure structural equation modeling) pvalue: significant value, RMSEA: Root mean square error of approximation, GFI: Goodness of fit, IFI: Incremental fit index CFI: comparative fit index, TLI: Tucker-lewis index, NFI: Normed fit index, RFI: Relative fit index, Chisq/df: chisquare/degree of freedom.
Source: AMOS-SEM 18 software.

AMOS-SEM was applied to test the hypotheses and also to validate the model and come up with new validated model. So overall SEM model is given in the above figure. It is noted that model is found fit. As RMSEA =0.061 it is less than 0.08, all the other fit indices like GFI=0.940, IFI=0.949, CFI=0.949, TLI=0.936, NFI=0.919, RFI=0.899 are above the cut off level i.e. 0.9 and 0.8 by Hair, et al. [19]. As there were nine items of public health care but due to low factor loadings first seven items were deleted, and two items are retained. Preventive healthcare has nine items, but four items were deleted from analysis and five retained. Eight items of curative health care one is deleted. Now factor loadings for all the items are greater than 0.5. it is also noted that public health care shows variance upon preventive healthcare $R^2=0.96$, and beta value i.e. $\beta=0.98$, $p<0.05$ it means that one percent change in awareness will bring 98% change in preventive health care. Further awareness shows variance upon curative healthcare i.e. $R^2=0.91$ and $\beta=0.95$ $p<0.05$ means one unit change in awareness will change 95% change in curative healthcare Figure 3.

H₄: Educated are Scoring Higher on all Variables.

Table-15. Group statistics.

Variables	Literacy	Mean	S.D	S.E mean	F	p
Public health awareness	Literate	4.0309	.52447	.05901	16.126	0.000
	Illiterate	3.1148	.75881	.07999		
Preventive healthcare	Literate	3.2729	.36367	.04092	5.021	0.011
	Illiterate	2.8531	.37903	.03995		
Curative healthcare	Literate	2.4288	.64478	.07254	6.773	0.010
	Illiterate	3.0597	.84139	.08869		

Source: SPSS 25(Statistical Program for services solutions).

To check the mean differences between two groups of literate and illiterate respondents of our study (*mean difference* 4.03 and 3.11 with *SD* .52 and .75 for public health awareness, 3.27 and 2.85 *mean difference* with .36, .37*SD* for preventive healthcare and 2.42 and 3.05 *mean difference* with .64 and .84 *SD,* for curative healthcare, we have applied t-test. though t-tab for all the three variables was greater than the 1.960 value of f calculated with P-values (0.000, 0.011 and 0.010) respectively highlight that there is significant differences between the average responses of literate and illiterate, thus on the basis of above evidence our hypothesis "educated score higher than non-educated" is substantiated and accepted Table 15.

H₅: Impact of Occupation on PHA, PHC & CHC.

Table-16. Group statistics.

Variables	Occupation	Mean	Std. deviation	Std. error mean	F	p
Public health awareness	Employee	3.6364	.81017	.08636	17.23	0.000
	Businessman	3.4417	.78508	.08723		
Preventive healthcare	Employee	3.1149	.44042	.04695	23.69	0.000
	Businessman	2.9781	.40078	.04453		
Curative healthcare	Employee	2.7116	.81017	.08636	35.47	0.000
	Businessman	2.8225	.82582	.09176		

Source: SPSS 25(Statistical Program for services solutions).

Again to test hypothesis H_5, we calculated the mean differences between two groups of our respondents i.e. Employee and Businessmen, there was significant mean difference in the opinion for public health awareness, it was 3.63 and 3.44 with *SD* .81 and .78, likewise, we can see from the above table the value of 3.11 and 2.97 *mean difference* with .44, .40 *SD* for preventive healthcare and 2.71 and 2.82 *mean difference* with .81 and .82 *SD,* for curative healthcare. Since there was significant mean difference, therefore, we have employed t-test. The t-tabulated for the two variables was greater than the 1.960 value of t-calculated with P-values (0.000, and 0.000) which means that there are significant differences between the average responses of businessman and employee Table 16.

3. DISCUSSIONS & CONCLUSIONS

The Millennium Development Goals (MDGs) provide time-bound objectives to overcome extreme poverty and provide education, and security as underlined in the Universal Declaration of Human Rights. Furthermore, political devolution within Pakistan provides a greater opportunity for public healthcare to address issues related to system-planning, healthcare delivery structures, programs, and services [17]. Given the fact that developing countries like Pakistan are not able to provide all required health facilities and services to all citizens of the country in length and breadth of the country's landscape so there is acute need to prepare community in assisting the public health authorities in handling healthcare issues collectively. This is only possible if 'public health awareness' programs are launched using multiple sources and ways of approaching diversity of communities through that media which is in access of a specific community.

Thus, community participation in public health programs is widely considered as the best way to help citizens in having best possible healthcare services in both advanced and developing countries like Pakistan. Social media has become the dominant form of communication with billions of users possessing a smart phone to access multiple platforms like face book, Watsapp, twitter, and many more. Millions of Pakistani citizens are already 'international-citizens' by having and using 'Smart Phones' exchanging a diversity of messages about different shades of life like educational, social, political, religious, cultural, technological as well as 'health-tips.' Public health authorities must explore different ways to use social media for 'public-health-awareness' to access masses simultaneously with the intention to 'kill the possibility of bad health than bad health itself.' Aim of this study was to find the relationship between public health awareness, preventive and curative health care. It is found that all the research variables are significantly and positively related with each other so H1 was accepted. These results are consistent with previous results of Albejaidi and Kundi [20] found positive and reported positive results of health and its related factors, Similarly these results are in agreement with results of Kundi, et al. [21] reported significant results of health factors. H2 was to check the impact of public health awareness on preventive and curative health care. It is found that public health awareness significantly affects preventive and curative healthcare. These results are in line with results of Qureshi, et al. [22] these results got support from results of Kundi, et al. [23].

3.1. Direction/Implications for Future Research

The awareness emerged as most dominated factor in model of this study and curative healthcare is most ignored and overlooked area, therefore, future researchers can give more focus to curative healthcare so that more interesting results could be reported. Similarly, this study used simple linear models in analysis, however, it is suggested that future studies may use multiple regression models. Moreover, this study was quantitative in nature, yet in future, qualitative studies could also be conducted in order to have in depth and better understanding of these issues.

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