KNOWLEDGE, ATTITUDES AND PRACTICE REGARDING THE COVID-19 PANDEMIC AMONG THE PHYSIOTHERAPISTS WORKING IN INTENSIVE CARE UNIT ACROSS SINDH, PAKISTAN.

Aadil Ameer Ali[1*], Mukesh Kumar[1], Wafa Zainab[1], Shahmeer Chandio[1], Shahjahan Siyal[2], Naseebullah Shaikh[1], Vikash Chughani[1]

1. Institute of Physiotherapy & Rehabilitation sciences, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan.

2. Department of Orthopedic Surgery, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan.

*Corresponding author: aadilamirali@hotmail.com

ABSTRACT:

Introduction: To evaluate the knowledge, practices and attitudes of healthcare providers regarding COVID-19 in Larkana, Pakistan.

Method: A cross-sectional survey was organized in different hospitals across the Sindh province, Pakistan from February to August 2023. A self-built survey was utilized among the 116 health care providers and SPSS version 23 was utilized for analysis the data.

Results: The majority (n=154, 55.6%) were male, (n=252, 91%). having aged between 23 to 33 years. In educational status (n=209, 74.4%) were graduates. During the appraisal of the knowledge, practices and attitudes results revealed that the majority (n=266, 96%) have adequate knowledge and (n=164, 59.2%) have positive attitudes towards COVID-19 but most of the healthcare providers (n=159, 57.4%) were in doing bad practice.

Conclusion: This Study summed up that the physiotherapists working across the province of Sindh in different hospitals have great information and an uplifting outlook towards Coronavirus, while the act of Pakistani medical care suppliers requires very serious consideration because the outcomes uncovered that the training is underneath the imprint.

Keywords: Knowledge, Attitude, Practice, COVID-19, Physiotherapist, Intensive care.

INTRODUCTION:

In December 2019, a highly contagious novel coronavirus outbreak was discovered in a seafood market in Wuhan, Hubei, China. Patients who were reported to different hospitals with sudden onset of symptoms like cough, fever, myalgia, and sore throat are main signs of COVID-19, as well as acute respiratory distress syndrome (ARDS), sporadic GI

(gastrointestinal) symptoms, unclassified viral pneumonia (unspecified etiology), and though it may seem strange the seizures were among the patient's Little variation was detected in the COVID-19 symptoms, and some individuals were also reported to be asymptomatic (1-6). Children, older people, and those with any chronic illness are more susceptible to COVID-19(7-8). The COVID-19 reservoir is thought to be the Asian civet cat, or Paguma larvata (9, 10).

In addition to finding small droplets caused by the sneezing, coughing, and talking of COVID-19-infected people, COVID-19 spreads through contact with contaminated surfaces and the air for up to 72 hours (2, 5, 10–12). The only means of prevention for COVID-19, even though it is a recent and contagious disease, is the protection of suspects (2, 13). The (WHO) declared COVID-19 a public health emergency in the final days of January 2020, and a pandemic in the middle of March 2020 (6, 14). Since its identification, COVID-19 has been exported to developing nations on a global scale in less than 30 days (1, 15). As of the publication of this article, COVID-19 had a 2.9% global fatality rate (10). Approximately millions of cases with COVID-19 conformed diagnostic have been reported globally (14). Up till the end of March 2020, Pakistan had recorded over one thousand COVID-19 cases (4, 14). Understanding the impact of points of view & observes on the feast of ailments can be fundamental in creating aversion & monitoring the syndrome (16-18). Physiotherapists' information in regard to any exceptionally communicable and pandemic sickness like (Coronavirus) assumes a fundamental part in diminishing the spread of diseases (16-18).

METHODOLOGY:

This cross-sectional survey was held from February to August 2023. The Data was gathered from the Physiotherapists who were working in intensive care units in different hospitals across Sindh, Pakistan. The Convenient Non-Probability Sampling Method was used among 116 participants who were consented and included to take part in the overview. A member who was working in the ICU who consented to participate was incorporated. While hesitant to sign illuminate assent was excluded. The poll comprised two unique parts: first is comprised of the socioeconomics that incorporates age, Gender, and educational level. The second one comprises information, disposition and practice (KAP) by Chasing after the proposals for clinical and local area organization of Coronavirus given by the Public Wellbeing Commission of the

Individuals' Republic of China (8, 13). The creator fostered the survey that comprised of complete 25 unique inquiries (Knowledge=11, Practice=10, Attitude=04). The information was gathered by utilizing a self-designed questionnaire, and physiotherapists were drawn nearer to complete the overview on the spot, upon request simply minor help was given on request. Information was analyzed and displayed in recurrence and rates for straight-out factors, and mean and standard deviations were introduced for persistent factors. Inferential insights (Individual Connection) were used to perceive the connection between Information, disposition and practice. The permission was obtained from the Departmental ethical review committee (ERC) of the Institute of physiotherapy & rehabilitation sciences, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan. Before filling out the questionnaire, Informed consent was taken from members (Physiotherapists, who stated that their support is thoughtful, their data will be kept classified and they can leave the review whenever they want, after that the pro forma was filled for information collection.

RESULTS:

Demographic Characteristics:

The Demographic Characteristics are reported in Table 1, which shows that the majority (n=81, 69.8%) belongs to the age group between 23-33 years and (n=89, 76.6%) were male.

Table 1: Demographic Characteristics

Characteristics	Frequency (n=116)	Percentage (100)
Age group		
23-33 years	81	69.8
34-44 years	25	21.5
45 and above	10	8.6
Gender		
Male	89	76.7
Female	27	23.2
Education		
Graduate	77	66.3
Post-graduate	39	33.6

Assessment of Knowledge towards COVID-19

The answers of people about their understanding of COVID-19 are shown in Table 2. Questions are focusing on the signs and symptoms, method of transmission, and preventive strategy were employed to evaluate knowledge. Each

response was either "Yes" or "No," with "Yes" receiving the score of 1 and "No" receiving the score of 0. The knowledge questionnaire had a maximum (11), a minimum (0), and a range of scores (0). The assumption was that knowledge with a score of 6 or less was insufficient, whereas knowledge with a score of 7 or more was considered enough. The individual points were included to establish the final score. Out of 116 participants, (n=11, 9.4%) fell into the inadequate knowledge category for COVID-19, whereas (n=105, 90.5%) fell into the appropriate category. Inadequate knowledge was evident in the question's response relating mode of transmission of COVID-19.

Table 2: Answer to COVID-19 knowledge components

COVID-19 Knowledge components	Yes n(%)	No n(%)
Do you consider COVID's significant clinical aftereffects are fever, weakness, dry hack, and solid agony (myalgia).	98(84.4)	18(15.5)
Regardless of the standard cool, runny nose (rhinorrhea), nasal blockage, and sniffling are not normal in that frame of mind from Coronavirus infection.	82(70.6)	34(29.3)
Right now there is no solid solution for Coronavirus, yet starting indicative and intriguing treatment might assist larger part patients with recuperating from disease.	111(95.6)	05(4.3)
Not all COVID-19 patients develop severe signs; the elderly and those with chronic conditions, including obesity, are at higher risk.	77(66.3)	39(33.6)
Consumption and openness to the animals are prone to get contaminated by the Coronavirus infection.	61(52.5)	55(47.4)
People with Coronavirus could not feast the infection among others not having a fever	14(12)	102(87.9)
The Coronavirus infection feasts through breathing drops of infected person	113(97.4)	03(2.5)
In current episode of Coronavirus, for kids and youthful grown-ups is it not obligatory for taking security drives to forestall the contamination?	21(18.1)	95(81.9)
To forestall the disease by Coronavirus, medical care suppliers should overlook visiting too packed areas like train stations and disregard utilizing public transportation	66(56.8)	54(46.5)
Seclusion and medicine of patients who are enduring with the Coronavirus infection are powerful techniques to diminish the range of Coronavirus.	109(93.9)	07(6)
Medical services suppliers having contact with patient experiencing the Coronavirus infection should be segregated in a particular spot. By	111(95.6)	05(4.3)

and large, the perception period is 14 days.

Note: Evaluation of Knowledge was completed by giving 1 to the right answer and 0 to the wrong answer. The range of scoring of the knowledge questionnaire consisted of a max of 11 and a min of 0. The 6 and lower points were presumed as adequate knowledge whereas the 7 and above were supposed as adequate knowledge.

Assessment of Attitude towards COVID-19

Table 3 portrays the reaction of people concerning the Demeanor of Coronavirus. The mentality (positive and negative) was evaluated with the assistance of four (04) inquiries. In mentality there was a score of maximums (4) and least (0), a score of 1 was doled out to uplifting perspective, and 0 to negative disposition. A score of 2 and below is accepted as a regrettable disposition while 3 or more is for an uplifting outlook. The absolute score was figured by summarizing the scores independently. Out of 116 members, (n=68, 58.6%) showed an uplifting perspective, while (n=48, 40.3%) showed a negative disposition. A larger part (n=76, 65.5%) of members concurred that the Coronavirus will be commanded effectively. While (n=70, 60.3%) of individuals expressed that Pakistan can't acquaint the legitimate treatment to fix the Coronavirus. Likewise, (n=79, 68.1%) of individuals had a certainty in their country that it would win the fight against the Coronavirus. Even though (n=96, 82.7%) of members refreshed their insight in regards to Coronavirus since the month before.

Table 3: Response to COVID-19 Attitude components

COVID-19 Attitude components	Yes n (%)	No n (%)
Do you concede that Coronavirus will ultimately be controlled?	76(65.5)	40(34.4)
Do you concede that Pakistan can acquaint the legitimate treatment with fix the Coronavirus?	46(39.6)	70(60.3)
Do you have believe that Pakistan may effectively accomplish the triumph in the event of Coronavirus infection?	79(68.1)	37(31.8)
Did you refresh your insight basically for once with respect to the Coronavirus since the month before?	96(82.7)	20(17.2)

Note: Evaluation of Demeanor was finished by giving 1 to address the answer and 0 to some unacceptable answer. In demeanor, there was a score of most extreme 4 and least 0. A score of 2 and underneath is accepted as a regrettable disposition though 3 or more for an uplifting outlook.

Assessment of Practice to COVID-19

Table 4 depicts the reaction of people concerning the training towards

Coronavirus. The training (Great and awful) was assessed by the 10 inquiries. Every reaction was comprised of "Yes" and "No" where the "yes" was relegated to 1 score and "No" to 0. The scoring size of the training poll was comprised of the most extreme (10), and least (0). The 6 and beneath focuses were seen as terrible practice while the 7 or more was seen as great practice. The complete score was determined by summarizing the scores separately. Against Coronavirus, out of 116 members, (n=67, 57.7%) were doing terrible practice, though (n=49, 42.2 %) were doing great practice. A larger part (n=101, 87%) of members went to all fundamental preparatory lengths in their working environments towards Coronavirus and (n=91, 78.4%) showed the individual drive to forestall the disease (Coronavirus). Among all members (n=61, 52.5%) separated themselves from their families. Nonetheless, the greater part (n=85, 73.2%) of members were not going to swarm places, even though, (n=107, 92.2%) were wearing a veil when they were venturing out from home. The (n=104, 89.6%) members were cleaning up for 20 seconds. Among all, (n=60, 51.7%) of members were stamping themselves to have the option to distinguish the associated patient with Coronavirus. Moreover, (n=67, 57.7%) of members didn't get the individual defensive gear (PPE) from their separate medical clinic, and (n=109, 91.5%) had seen a patient of Coronavirus.

Table 4: Response to COVID-19 Practice components

COVID-19 Practice components	Yes n (%)	No n (%)
As a health care worker, do you go to all prudent lengths at your working environment for Coronavirus infection?	101(87)	15(12.9)
To prevent Coronavirus contamination, as a healthcare provider, do you take any specific measures?	91(78.4)	25(21.5)
To prevent the spread of Coronavirus, a healthcare provider should maintain distance from their family.	61(52.5)	55(47.4)
In current circumstance, have you visited any jam-packed area?	31(26.7)	85(73.2)
In current circumstance, have you worn a veil especially while escaping home?	107(92.2)	09(7.7)
Do you clean up for 20 seconds routinely?	104(89.6)	12(10.3)
Do you experience any quiet who is suspect to Coronavirus?	93(80.1)	23(19.8)
Might it be said that you are ready to recognize the associated patients with Coronavirus?	60(51.7)	56(48.2)

Does your clinic gave you the individual defensive gear (PPE)?	49(42.2)	67(57.7)
Have you encountered any patients with Coronavirus?	109(91.5)	07(6)

Note Practice was appraised by giving 1 to the correct reply and 0 to the wrong reply. The scoring scale of the practice questionnaire was consisting of a maximum of 10 and a minimum of 0. The 6 and below points were perceived as bad practice whereas the 7 and above were perceived as good practice.

Overall Knowledge, Attitude and practice

Table 5 describes good knowledge and positive attitudes along with bad practices among the physiotherapists of Pakistan.

Table 6: Overall Knowledge, Attitude and practice

	Good knowledge n (%)	Poor knowledge n (%)
Knowledge mean score 8.86	111(95.6)	05(4.3)
	Positive Attitude	**Negative Attitude**
Attitude mean score 2.61	71(61.2)	45(38.7)
	Good Practice	**Bad Practice**
Practice mean score of 5.18	49(42.2)	67(57.7)

**** The cut of score for the knowledge was ≤6, Attitude ≤2 and for practice ≤6.***

Correlation among Knowledge, Practice, and Attitude Scores

Table 6 portrays the critical positive connection between the information mentality (r=0.239, p<0.00) and demeanor practice(r=0.127, p<0.39). The results adjust the positive connection between the information disposition and mentality practice against COVID-19.

Table 6: Correlation between knowledge, attitude, and practice scores

Variable	Correlation coefficient	P-value
Knowledge- Attitude**	0.239	0.000
Knowledge-Practice	0.101	0.095
Attitude –Practice*	0.12	0.39

Correlation is significant at the 0.05 level (2-tailed)
Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION:

The constant review was spread determined to assess the information, demeanor & practice (KAP) to Coronavirus amid the clinical advantages physiotherapists of Pakistan, which uncovered that they had sound information and moving perspective towards Coronavirus, however, regrettably, horrendous practice was noticed with them. Among those (n=116) people, the (n=67, 57.7%) were doing horrendous practice towards Coronavirus. As a greater piece of Physiotherapist was viewed as

related to horrendous practice, due to not giving the particular defensive gear (PPE) by their various focuses, the stream study was according to the outcomes revealed by Polly Pallister-Wilkins in 2016 (19), which expected to be that, utilization of PPE is principal to save the presence of patients with in various ejection of overpowering sicknesses. Additionally, reviews were created by Chia et al in 2005, Fischer et al in 2014, Macintyre et al in 2015 Tomas et al in 2015, and Adams et al in 2020 that to diminish the responsiveness of convincing burdens such as Coronavirus which is astoundingly adaptable and can be nosocomial, it's basic to give the agreeable number and revived pinion wheels of individual security (20-26).

It is fundamental to see that, various evaluations were addressed from the US of America and pondered that considering the strong nature and release up conditions, Coronavirus can be connected to essential anxiety about being self-destroyed which additionally may be the fundamental wellspring of stunning practices amongst the Physiotherapist (27, 28). As we have examined the appraisals, facilitated in the US of America by Gery and Gloria in 1989, Barone et al in 2009, Consumes et al in 2012 and Oladimeji et al., 2015 in Nigeria and settled that because of the in-satisfactory and nonappearance of preparing of related to the affliction episode like Coronavirus, subsequently horrible practice was seen among them. (29-33) Furthermore, the government ought to manufacture the scores of practices by chipping away at the adequacy and number of concerned course of action stages by which Physiotherapist comprehend, how to manage and arrange the episodes of such diseases (34-37). Moreover, when stood apart from metropolitan, in country regions the unsuitable clinical advantages of working environments concerning Coronavirus were seen near the horrendous showing of Physiotherapist (36, 38-41). At long last the Execution of good practice needs adequate sources, remarkable association and fair preparation from the public authority is typical on a crushing basis (42-43).

The review uncovered that the general information on clinical advantages suppliers are wonderful with moving perspective notwithstanding the way that they didn't arrange the remarkable information and lifting point of view into mind-boggling rehearses, the enormous explanation could be this kind of pandemic which has never been fit at this point and the clinical advantages working environments come up short on working environments concerning confirmation.

Additionally, they have not been organized exactly as expected to battle what's going on, so appropriate preparation and approaches of insurance work environments will empower clinical thought suppliers to integrate the information and supportive perspective to battle against this pandemic.

CONCLUSION:

The study revealed that most physiotherapists were not performing good practice against COVID-19 because of the fear of being self-infected even in 2023. In the practice of Physiotherapist, the unavailability of personal protective equipment and lack of training were observed and found that the leading causes of substandardized practice in intensive care units.

REFERENCES:

1. Mohamed SH, Subbarayalu AV. Knowledge, attitude, practices and perceived job stress among physical therapists in the kingdom of Saudi Arabia during the COVID-19 pandemic: a cross-sectional study. Acta Bio Medica: Atenei Parmensis. 2022;93(5).
2. Trojman A, Hough J, Hides J, Gustafsson L, Flores O, Paratz J. Physiotherapy practices when treating patients with COVID-19 during a pandemic: A survey study. Heart & Lung. 2023 Jan 1;57:152-60.
3. Srivastava, K.C., Shrivastava, D., Sghaireen, M.G., Alsharari, A.F., Alduraywish, A.A., Al-Johani, K., Alam, M.K., Khader, Y. and Alzarea, B.K., 2020. Knowledge, attitudes and practices regarding COVID-19 among dental health care professionals: a cross-sectional study in Saudi Arabia. Journal of International Medical Research, 48(12), p.0300060520977593.
4. Symvoulakis EK, Karageorgiou I, Linardakis M, Papagiannis D, Hatzoglou C, Symeonidis A, Rachiotis G. Knowledge, attitudes, and practices of primary care physicians towards COVID-19 in Greece: a cross-sectional study. InHealthcare 2022 Mar 16 (Vol. 10, No. 3, p. 545). MDPI.
5. Ezema CI, Erondu OF, Onyeso OK, Alumona CJ, Ijever AW, Amarachukwu CN, Amaeze AA. Radiographers' knowledge, attitude and adherence to standard COVID-19 precautions and the policy implications: a national cross-

sectional study in Nigeria. Annals of Medicine. 2023 Dec 12;55(1):2210844.

6. Kashif M, Ahmad A, Ashraf A, Imtiaz Z, Albalwi A, Hussain MN. Physical therapists' knowledge and implementation of best practices in the outpatient physiotherapy department during the COVID-19 pandemic: A cross-sectional study. Work. 2022 Jan 1;71(1):41-51.
7. Bazaid AS, Aldarhami A, Binsaleh NK, Sherwani S, Althomali OW. Knowledge and practice of personal protective measures during the COVID-19 pandemic: A cross-sectional study in Saudi Arabia. PloS one. 2020;15(12):e0243695.
8. Peeri NC, Shrestha N, Rahman MS, Zaki R, Tan Z, Bibi S, Baghbanzadeh M, Aghamohammadi N, Zhang W, Haque U. The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats: what lessons have we learned?. International journal of epidemiology. 2020 Jun 1;49(3):717-26..
9. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Emergence, transmission, and characteristics of human coronaviruses. Journal of advanced research. 2020 Jul 1;24:91-8.
10. Whitworth J. COVID-19: a fast evolving pandemic. Transactions of the Royal Society of Tropical Medicine and Hygiene. 2020 Apr;114(4):241.
11. Van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, Tamin A, Harcourt JL, Thornburg NJ, Gerber SI, Lloyd-Smith JO. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. New England journal of medicine. 2020 Apr 16;382(16):1564-7.
12. Shen K, Yang Y, Wang T, Zhao D, Jiang Y, Jin R, Zheng Y, Xu B, Xie Z, Lin L, Shang Y. Diagnosis, treatment, and prevention of 2019 novel coronavirus infection in children: experts' consensus statement. World journal of pediatrics. 2020 Jun;16(3):223-31.
13. Organization WH: Coronavirus disease 2019 (COVID-19): situation report, 67. 2020.
14. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. The

Lancet infectious diseases. 2020 May 1;20(5):533-4.

15. Bakry SH, Mustafa AF, Eldalo AS, Yousif MA. Knowledge, attitude and practice of health care workers toward Hepatitis B virus infection, Sudan. International Journal of Risk & Safety in Medicine. 2012 Jan 1;24(2):95-102.
16. Gulilat K, Tiruneh G. Assessment of knowledge, attitude and practice of health care workers on infection prevention in health institution Bahir Dar city administration. Sci J Public Health. 2014 Aug 7;2(5):384-93.
17. Shi Y, Wang J, Yang Y, Wang Z, Wang G, Hashimoto K, Zhang K, Liu H. Knowledge and attitudes of medical staff in Chinese psychiatric hospitals regarding COVID-19. Brain, behavior, & immunity-health. 2020 Apr 1;4:100064.
18. Pallister-Wilkins P. Personal Protective Equipment in the humanitarian governance of Ebola: between individual patient care and global biosecurity. Third World Quarterly. 2016 Mar 3;37(3):507-23.
19. Fischer WA, Hynes NA, Perl TM. Protecting health care workers from Ebola: personal protective equipment is critical but is not enough. Annals of internal medicine. 2014 Nov 18;161(10):753-4.
20. Tomas ME, Kundrapu S, Thota P, Sunkesula VC, Cadnum JL, Mana TS, Jencson A, O'Donnell M, Zabarsky TF, Hecker MT, Ray AJ. Contamination of health care personnel during removal of personal protective equipment. JAMA internal medicine. 2015 Dec 1;175(12):1904-10.
21. MacIntyre CR, Chughtai AA, Seale H, Richards GA, Davidson PM. Uncertainty, risk analysis and change for Ebola personal protective equipment guidelines. International journal of nursing studies. 2015 May;52(5):899.
22. Chia SE, Koh D, Fones C, Qian F, Ng V, Tan BH, Wong KS, Chew WM, Tang HK, Ng W, Muttakin Z. Appropriate use of personal protective equipment among healthcare workers in public sector hospitals and primary healthcare polyclinics during the SARS outbreak in Singapore. Occupational and Environmental Medicine. 2005 Jul 1;62(7):473-7.

23. Adams JG, Walls RM. Supporting the health care workforce during the COVID-19 global epidemic. Jama. 2020 Apr 21;323(15):1439-40.
24. Organization WH: Rational use of personal protective equipment for coronavirus disease (COVID-19): interim guidance, 27 February 2020. In.: World Health Organization; 2020.
25. Emanuel EJ, Persad G, Upshur R, Thome B, Parker M, Glickman A, Zhang C, Boyle C, Smith M, Phillips JP. Fair allocation of scarce medical resources in the time of Covid-19. New England Journal of Medicine. 2020 May 21;382(21):2049-55.
26. Person B, Sy F, Holton K, Govert B, Liang A, Team SC, Garza B, Gould D, Hickson M, McDonald M, Meijer C. Fear and stigma: the epidemic within the SARS outbreak. Emerging infectious diseases. 2004 Feb;10(2):358.
27. Gerbert B, Maguire B, Badner V, Altman D, Stone G. Why fear persists: health care professionals and AIDS. Jama. 1988 Dec 16;260(23):3481-3.
28. Gery GJ. Training vs. performance support: Inadequate training is now insufficient. Performance Improvement Quarterly. 1989 Sep;2(3):51-71.
29. Burns MI, Baylor CR, Morris MA, McNalley TE, Yorkston KM. Training healthcare providers in patient–provider communication: What speech-language pathology and medical education can learn from one another. Aphasiology. 2012 May 1;26(5):673-88.
30. Sheffer CE, Barone CP, Anders ME. Training health care providers in the treatment of tobacco use and dependence: pre-and post-training results. Journal of evaluation in clinical practice. 2009 Aug;15(4):607-13.
31. Alanazi A, Alsalmeh M, Alsomali O, Almurshdi AM, Alabdali A, Al-Sulami M, Al-Nemer A, Al-Qusairy A, Aloraibi S, Iqbal Z. Poor basic life support awareness among medical and college of applied medical sciences students necessitates the need for improvement in standards of BLS training and assessment for future health care providers. Middle East J Sci Res. 2014;21(5):848-54.
32. Oladimeji AM, Gidado S, Nguku P, Nwangwu IG, Patil ND, Oladosu F, Roberts AA, Waziri

NE, Shuaib F, Oguntimehin O, Musa E. Ebola virus disease–gaps in knowledge and practice among healthcare workers in Lagos, August 2014. Tropical Medicine & International Health. 2015 Sep;20(9):1162-70.

33. Rahman AA, Khoso MH, Shaikh Z, Malik E, Siyal FJ, Rahoojo A, Humayun A, Shaikh SA, Baig MT, Unar AA, Unar K. Myths and Realities: Novel Study on COVID-19 among the Medical students of Rural University of Sindh. Archives of Pharmacy Practice¦ Volume. 2021 Jan;12(1):17.
34. Kak N, Burkhalter B, Cooper MA. Measuring the competence of healthcare providers. Operations Research Issue Paper. 2001 Jul;2(1):1-28.
35. Meng F, Cao Y, Khoso MH, Kang K, Ren G, Xiao W, Li D. Therapeutic effect and mechanism of combined use of FGF21 and insulin on diabetic nephropathy. Archives of Biochemistry and Biophysics. 2021 Nov 30;713:109063.
36. Gijare M. Effectiveness of teaching on infection control practices among health care professionals. Sinhgad e Journal of Nursing. 2012;2(2):5-9.
37. Priebe S, Sandhu S, Dias S, Gaddini A, Greacen T, Ioannidis E, Kluge U, Krasnik A, Lamkaddem M, Lorant V, Riera RP. Good practice in health care for migrants: views and experiences of care professionals in 16 European countries. BMC public health. 2011 Dec;11:1-2.
38. Beech B, Leather P. Workplace violence in the health care sector: A review of staff training and integration of training evaluation models. Aggression and violent behavior. 2006 Jan 1;11(1):27-43.
39. Lan PT, Mogren I, Phuc HD, Lundborg CS. Knowledge and practice among healthcare providers in rural Vietnam regarding sexually transmitted infections. Sexually transmitted diseases. 2009 Jul 1:452-8.
40. Ali AA, Haq N, Rafiq M, Hussain A, Ismail M, Ahmad T, MR MI, Yasmin S. Knowledge, attitude and practice of health care providers regarding COVID-19 in Pakistan. Pakistan Journal of Rehabilitation. 2021 Mar 24;10(1):93-105.
41. Krause G, Schleiermacher D, Borchert M, Benzler J, Heinmüller

R, Ouattara K, Coulibaly S, Diasso I, Ilboudo A, Diesfeld HJ. Diagnostic quality in rural health centres in Burkina Faso. Tropical medicine & international health. 1998 Feb;3(2):100-7.

42. Strasser R. Rural health around the world: challenges and solutions. Family practice. 2003 Aug 1;20(4):457-63.
43. Shen LY, Ochoa JJ, Shah MN, Zhang X. The application of urban sustainability indicators–A comparison between various practices. Habitat international. 2011 Jan 1;35(1):17-29.