11-24-2023

Using simulation to assess knowledge and attitude amongst healthcare provider regarding cardiopulmonary resuscitation at a tertiary care hospital in Karachi, Pakistan- A pre and post test qausi experimental study

Nausheen Barkat Ali Noorani

USING SIMULATION TO ASSESS KNOWLEDGE AND ATTITUDE AMONGST HEALTHCARE PROVIDER REGARDING CARDIOPULMONARY RESUSCITATION AT A TERTIARY CARE HOSPITAL IN KARACHI, PAKISTAN- A PRE AND POST TEST QAUSI EXPERIMENTAL STUDY

NAUSHEEN BARKAT ALI NOORANI

,

2

4

N

o

Nausheen Barkat Ali Noorani

v

e

m

b

Naushee

Khairunnisa Ajani

Shaista Farooqui

Ali

Noorani

24 November 3

Dedication

I am thankful to Almighty Allah for the countless blessings He has graciously bestowed upon me throughout my academic journey. I would like to dedicate this thesis to my *late* father **[Mr. Barkat Ali Noorani]** for his endless sacrifices and immeasurable love. Also, to the strongest woman that I know of, my dearest mother **[Mrs. Nasima Noorani]**.

I would most profoundly extend my heartfelt gratitude to all my family members including my sister Mrs. Nimira Asif, my brother-in-law Mr. Asif Bhaleshah, my elder brother Mr. Amirali Noorani, my sister-in-law Mrs. Mehreen Noorani, my younger brother Mr. Behroz Noorani, and my wonderful niece Amyrah Noorani for they have been my constant support system and for always keeping me motivated aim high.

Lastly, I would thank my relatives, cousins, friends, and colleagues for always backing me up, with guidance, compassion, and prayers.

List of Abbreviations

	Advance Cardiac Life Support
	Automated External Defibrillator
AHA	American Heart Association
AKUH	Aga Khan University Hospital
	Basic Life Support
BSN	Bachelor of Science in Nursing
CCR	Cardio Cerebral Resuscitation
	Centre of Innovation for Medical Education
CMO	Chief Medical Officer
CNO	Chief Nursing Officer
COVID-19	Corona Virus Disease 2019
CPR	Cardiopulmonary Resuscitation
CVD	Cardiovascular Disease

CVH	Cardiovascular Health
CVI	Content Validity Index
EMT	Emergency Medical Technicians
	Ethical Review Committee
HCPs	Healthcare Providers
	In-Hospital Cardiac Arrest
LMIC	Low-middle-income country
MBBS	Bachelor of Medicine and Bachelor of Surgery
NES	Nursing Education Service
OHCA	Outside-Hospital Cardiac Arrest
ROSC	Return of Spontaneous Circulation
SD	Standard Deviation
WHO	World Health Organization

Acknowledgements

First, I would like to express my heartfelt gratitude to my supervisor, Dr. Khairulnissa Ajani for her untiring and unmatched support in the successful completion of my academic journey. She has been the most humble, wise, and visionary person.

Secondly, I am thankful to my thesis committee members Dr. Faisal Waseem. He has helped me shape the whole idea of this study when it was in its initial phases regardless of his busy schedules, he was always available. Also, Ms. Shaista Farooqui, who helped statistics and gave prompt responses to all my quires.

A special thanks to Ms. Ishrat Jabeen for reviewing and editing my chapters and providing me constructive feedback regarding APA formats and grammar tips which will be beneficial for me for future assignments.

Declaration

I Nausheen Noorani daughter of Barkat Ali Noorani, holding student number 519862 declare that no work has been added to my thesis without acknowledgment of others' work. It does not contain any work which has been published previously, except for the areas where references are provided.

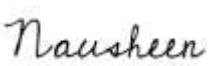
E

v

e

r

y



p

i

e

c

e

Signature of Candidate

Nausheen Noorani

o

f

2

4

N

o

v

t

e

h

m

Table of Contents

List of Figures

F

i

g

u

r

e

3

.

…….

List of Tables

Appendices

…….

A

p

p

e

n

d

i

x

B

.

……

Chapter One: Introduction

Background

Chapter 01 elaborates the background of the subject matter and expands around the importance of the issue to be studied. It further consists of study aim and its objectives followed by significance of this study.

A person experiencing a sudden cessation of cardiac activity, whether they have a cardiac morbidity, is referred to as cardiac arrest. It might show up suddenly or with other symptoms. If life-saving manures such as cardiopulmonary resuscitation does not start promptly, it could lead to death. Ideal cardiovascular health (CVH) illustrated via AHA's My Life Check—Life's Simple 7 (Figure 1) explaining few health behaviors for example smoking, physical activity, optimal diet and weight control however few health factors are also depicted which includes cholesterol blood pressure and blood glucose control. This simple 7 is a hallmark to maintain CVH which HCPs must know, advocate, teach and monitor for their patients. Also, it is a guide for the public to ensure good CVH subsequently decreasing the rate of cardiac arrests and mortality rates (Tsao, 2022).

Figure 1 AHA's My Life Check- Simple 7

In developed countries around the world 2 per 1000 cardiac arrest incidences were found to have received CPR effectively. On contrary, in under-developed countries there is

Additionally, in low-income countries including Afghanistan, Pakistan, India, Sri Lanka, Nepal, Kyrgyzstan and many other have poor health-seeking behaviors, which is a

. A study conducted in Asia and Europe confirmed that nurses with extensive working

It is also known that even with recent training, resuscitation knowledge and skills gradually decrease over time.

There can ve several teaching and learning strategies to maximize the learning opportunity

Study Hypothesis

Exposure to simulation will result in increased knowledge and positive attitude of healthcare providers about cardiopulmonary resuscitation.

Moreover, this study will further guide the factors influencing CPR skills of HCPs via simulation-based interventions. The results will help identify whether the knowledge and attitudes of healthcare professionals improve after simulation-based learning. Likewise, it research subsequently this study will concisely provide data from Pakistan which is currently

will give educationalists in the medical profession an insight into re-thinking and utilization of innovative learning strategies for better health outcomes.

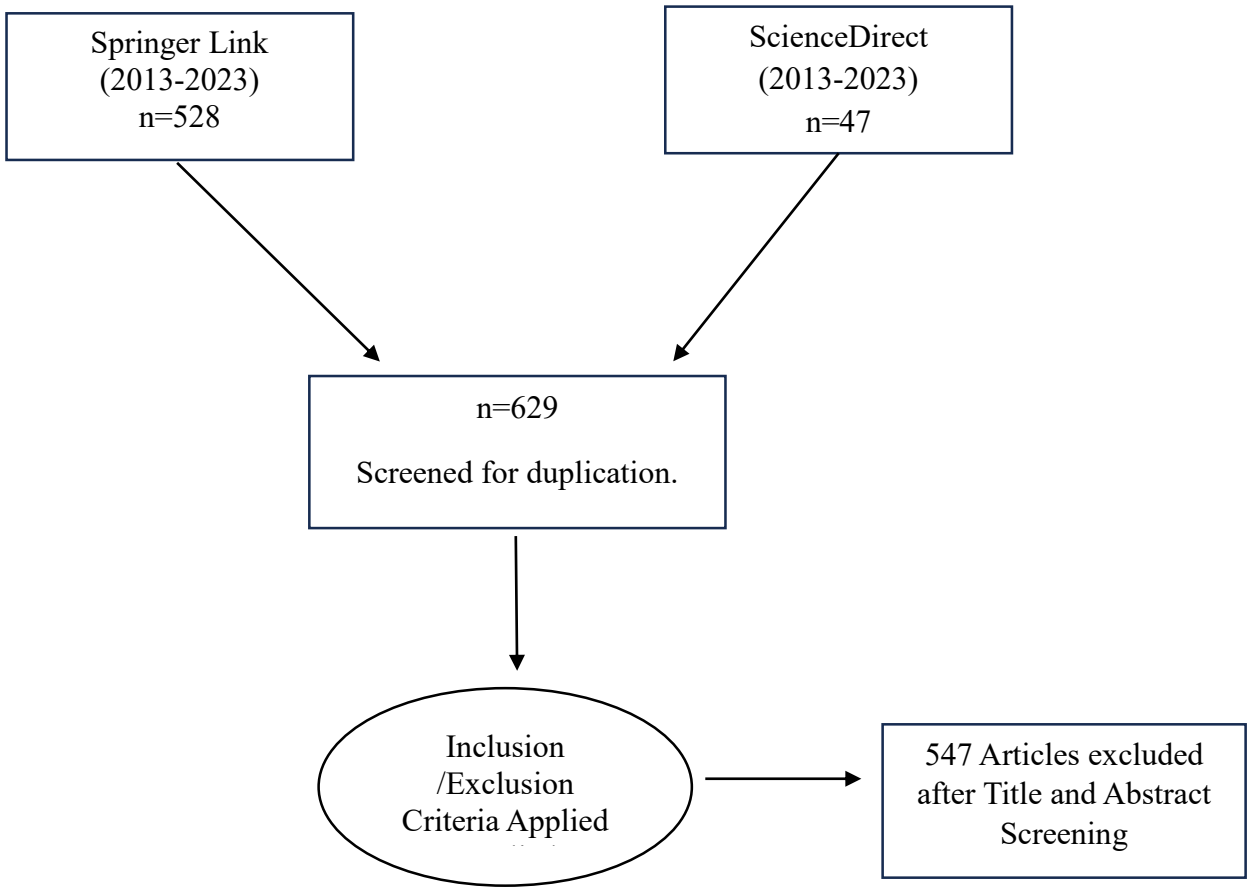
Chapter Two: Literature Review

This chapter presents extracts from the most relevant literature available. It has search strategy and comprehensive synthesized from general to specific that is from global to local studies. It will also cover study gaps found in the literature.

Search Strategy

“Cardiopulmonary Resuscitation” AND “Attitude” AND “Knowledge”.

Spinger Link and ScienceDirect gave a total of 629 studies which were published during last ten years that is from 2013 till 2023. Further filters were applied including “human subject”, “peer reviewed”, “English language” and “open access” “abstract screening” (see figure 02) All the relevan



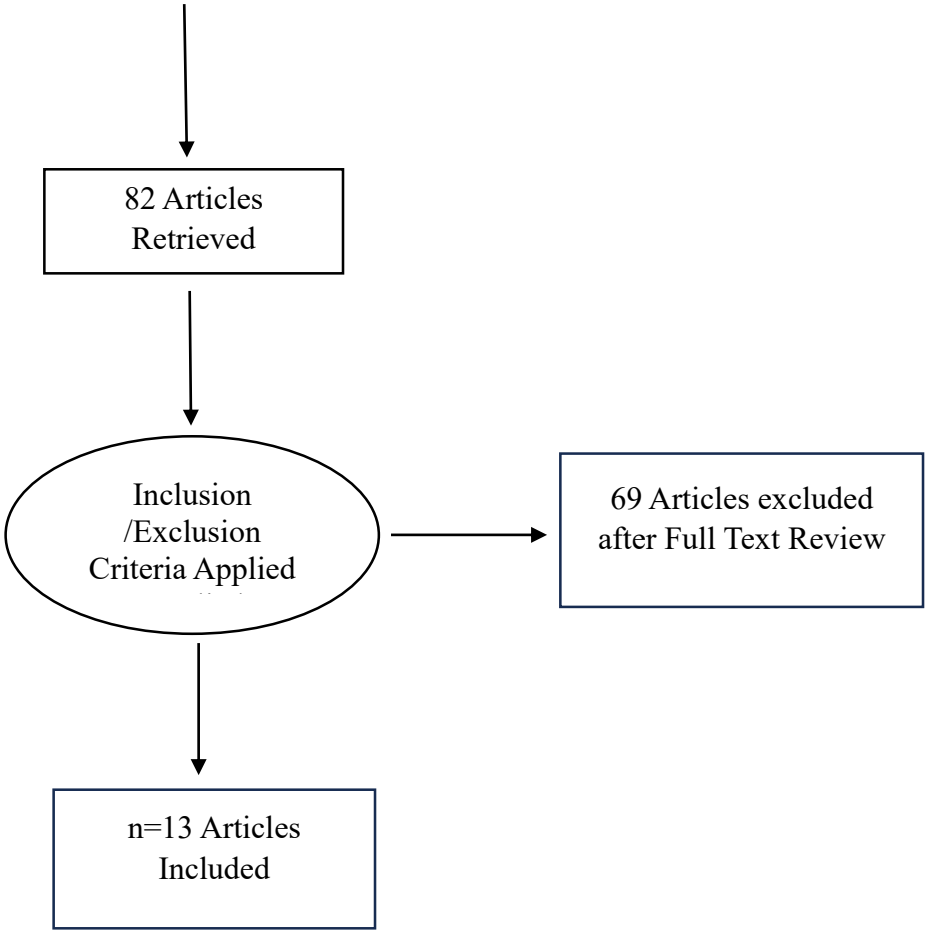


Figure 2. PRISMA Flow Diagram

h

e

Knowledge of Healthcare Providers Regarding CPR

a

To ensure that healthcare providers can administer cardiopulmonary resuscitation l

techniques in emergency situations, it is essential that they have adequate knowledge and t

awareness about the subject matter. Given that they deal with emergencies frequently, HCPs h

are expected to be well-versed. CPR training and re-training will be the foremost factor which c

can influence knowledge dissemination and retention amongst healthcare providers.

a

r The American Heart Association recommends CPR trainings for all healthcare

p

e

r

p

y

r

i

o

On contrary, in two different studies it was concluded that amongst the group of all healthcare professionals, physicians had scored high in knowledge assessment followed by the

However, in a recent publish Alkubati et al., (2022) performed knowledge assessment of CPR on nurses (n=220) which informed that more than half (53.65%) nurses scored above average. The two significant finding were (a) nurses with bachelor's degree had more

cluding a total of 724 responders. The score of ≥10 out of 15 were considered to have good acclaimed in his study carried out in China that most emergency department physicians lacked trainings and continuous education on cardiopulmonary resuscitation. 21.4% of the physicians had not received any retraining after the first session. It was also determined that to ensure quality in education dissemination about CPR, the use of high-tech feedback devices must be incorporated. Only 54.4% of physicians knew about the fundamentals of high-quality CPR. This is alarming since emergency departments are the first rescue point for saving patients' lives. In addition, a study done on cardiology physicians (n=120) in Turkey presented that 53% physicians scored well in theoretical knowledge about CPR (Oktay et al., 2019).

Attitudes of Healthcare Providers Regarding CPR

Attitudes of healthcare providers towards CRP skills acquisition and about its importance in healthcare field is very crucial to assess.

. The respondents had a positive attitude towards CPR trainings and mentioned explicitly that

C

R

P

Subsequently, in more study it was identified that the healthcare providers had positive

t

learning attitudes however it also mentioned that 63% of respondents were not willing to

r

perform CPR to strangers in an emergency. It further explained that the HCPs believed that

a

emergency situations do not occur commonly showing their incomprehension about the

i

importance of life saving skills (Alotaibi et al., 2016). In contrast, two other publications stated

n

that HCPs were willing to perform CPR on anyone in any given situation (Majid et al., 2019

i

& Iqbal et al., 2021).

n

A study in New Zealand was performed on registered podiatrists (n=171) to assess

g

knowledge and perceptions about cardiopulmonary resuscitation in 2021. It concluded that

s

more private clinic podiatrists considered it to be a part of their duty to perform CPR whenever

needed than those podiatrists working in other healthcare settings (Rule et al., 2021).

s

h

o

As medical innovations continue to progress, it is critical to keep performing research

u

which can identify knowledge and attitude gaps among healthcare professionals about CPR.

l

The Literature review from past ten years revealed that not enough work has been done in this

d

area. However, for the healthcare industry, cardiopulmonary compliances must be a priority.

Most of the studies were conducted in Asian countries, among which only two studies were

b

carried out in Pakistan. The striking feature is that all the studies are quantitative, cross-

s

sectional, which has resulted in limited information about the subject matter. This literature gap

analysis highlights the need for a more thorough comprehension of the attitudes and knowledge

B

a

f

r

, and differences in the pre and post results after simulation.

:

This chapter explains the study design, the study population, the research setting, the sample size, the sampling technique, the inclusion and exclusion criteria, the study's

n

a

d

v

a

n

t

a

g

e

conducting a study is its outcome features which are to be evaluated; therefore, in this study, the dependent variables were healthcare providers' knowledge and attitudes.

The Conceptual Definition of Knowledge. 'Knowledge' is a widely used word. It

and equal to 10 were considered to have 'good knowledge'. On the other hand, those who scored less than 10 were considered as having 'poor knowledge'.

, the participants' level of confidence to perform live-saving manoeuvre was tested. The scale ranges from 0-100, where the score of zero means 'cannot perform' and 100 means 'can perform completely'.

World Health Organization defines gender as "characteristics of women, men, girls and boys

on is an individual's core responsibility as a healthcare provider according to the task he/she

from the ethical review board at AKUH. The participants were approached in their wards for consent to participate in the study. After which, they were invited to CIME to the simulation lab. Moreover, the duration of each participant's time at the lab was around 1 hour and 40

study's aim. In addition, both questionnaires were made available in hard copies in the

A

p

p

e

n

d

i

x

A

Appendix B). Its internal consistency, according to Cronbach's alpha, is stated to be 0.96,
Lawshe's method (1975) of calculating its item-level content validity index (I-CVI), which

efined as “a situation in which a particular set of conditions is created artificially in order to study or experience something that could exist in reality” (Oxford University Press, 2023).

H

e

a

l

t

h

c

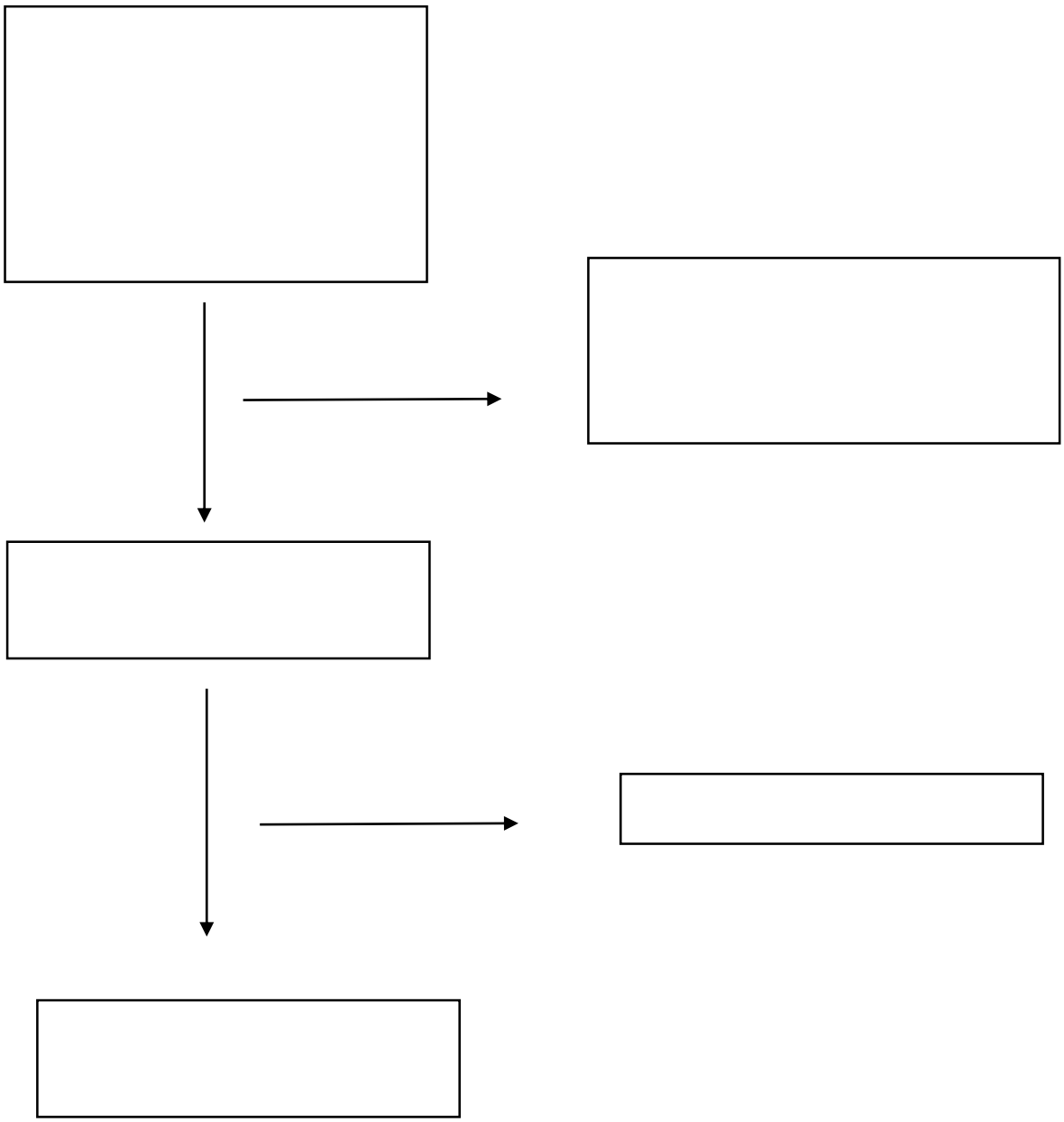
a

r

e

a

s



Moreover, informed consent was taken from study participants and a withdrawal policy was also explained. Moreover, ID codes instead of participants' names were used to protect the participants' identity and confidentiality. Moreover, the authors of the tools were

h

e

a

l

t

h

Variables		Frequency	Percentage
Gender	Male	41	44%
	Female	53	56%
Profession	Physicians	13	14%
	Technician	18	19%
	Registered Nurse	63	67%
Qualification	MBBS	13	14%
	BSN	62	66%
	Diploma in Nursing	1	1%
	Intermediate	18	19%
Work Experience	1 up to 3 years	15	16%
	More than 3 up to 6	51	54%
	More than 6 up to 9	22	23%
	More than 9 up to 12	6	6%

h

e

a

l

t

h

c

a

Knowledge	**Doctor**		**Nurses**		**Healthcare Assistants**	
Items	Pre-test [%]	Post-test [%]	Pre-test [%]	Post-test [%]	Pre-test [%]	Post-test [%]
What does CPR in basic life support stand for?	92	92	86	100	67	94
What is the location of hands for CPR in an adult?	31	92	60	92	33	100
What is the depth of chest compression in adult?	62	100	49	92	56	94
What is the rate of chest compression in adult per minute?	46	100	48	87	61	94
What is the method for opening airway during CPR in a suspected case of head injury?	62	100	62	94	39	100
How many mouth breaths do you have to give per minute during CPR in adults?	85	100	33	94	50	94
What is the compression-ventilation ratio in an adult?	62	100	44	92	22	94
Where is the "2 thumb-encircling hands technique recommended when 2 or more rescuers are present" used?	15	100	21	87	22	100
What is the position of fingers in infants during CPR?	46	100	49	90	39	100

What is the depth of chest compression in infant?	23	100	29	89	33	83
What is the rate of chest compressions in children per minute?	31	92	52	97	28	89
What is the preferred mode for rescue breathing in infants?	31	92	25	86	33	94
What is the compression-ventilation ratio in infants with 2 or more rescuers?	31	77	14	86	44	100
What should a rescuer give to potentially reduce the risk of gastric inflation?	46	92	24	87	56	100
Is CCR (cardio cerebral resuscitation) better than CPR?	8	77	24	86	39	94

.

h

e

nses' knowledge about chest compression rate in adult CPR increased significantly from 49%

h

e

h

t

h

h

e

h

Proficiency in the Area of '2 Thumb-encircling Technique.'

Moreover, within the framework of the '2 thumb-encircling technique' method, medical

	Pre-test Scores		Post-test Scores	
	Mean	**SD**	**Mean**	**SD**
Gender				
Male	5.95	2.9	13.8	1.89
Female	6.66	3.22	13.8	2.1
Profession				
Physician	6.69	3.14	14.03	1.4
Nurses	13.6	2.97	13.61	2.3
Healthcare Assistants	6.22	3.59	12.39	0.91

Years of Experience				
1-3 years	5.3	2.1	13.7	2.0
4-6 years	5.9	2.9	13.8	2.1
7-9 years	7.4	3.6	13.9	1.3
10-12 years	8.3	2.8	13.1	3.1

.

h

e

a

l

t

h

c

a

r

e

Variables	**Mean Score**	**SD**
Knowledge pre-test (out of 15)	6.44	3.22
Knowledge post-test (out of 15)	13.82	2.03

a

s

s

simulation-based training intervention. Turning to the ‘knowledge pre-test’ variable, the mean

i

s

t

a

Moreover, the ‘Knowledge post-test’ variable showcased a significant knowledge

.

Attitudes	Ranking	Doctor		Nurses		Healthcare Assistants	
Items		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Assess the safety of myself and the victim	10 - 20	0	0	19	0	28	0
	30 - 40	31	0	40	2	11	0
	50 - 60	54	0	24	5	61	0
	70 - 80	0	0	10	27	0	22
	90 - 100	15	100	7	66	0	78
	Total	100	100	100	100	100	100
Assess the victim level of consciousnes s in 5 sec	10 - 20	0	0	19	0	28	0
	30 - 40	38	0	37	2	16	0
	50 - 60	46	0	26	5	56	0
	70 - 80	8	0	8	25	0	22
	90 - 100	8	100	10	68	0	78
	Total	100	100	100	100	100	100
Shout for help while continuing with the primary survey	10 - 20	15	0	16	0	28	0
	30 - 40	31	0	40	0	33	0
	50 - 60	46	0	24	5	33	0
	70 - 80	8	15	13	35	6	28
	90 - 100	0	85	7	60	0	72
	Total	100	100	100	100	100	100
Open the airway by apply more effective maneuver, depending on the situation	10 - 20	15	0	16	0	33	0
	30 - 40	54	0	42	2	28	0
	50 - 60	23	0	26	5	39	0
	70 - 80	8	15	10	37	0	22
	90 - 100	0	85	6	56	0	78
	Total	100	100	100	100	100	100
Assess for breathing and differentiate between effective and	10 - 20	23	0	19	0	50	0
	30 - 40	46	0	37	0	11	0
	50 - 60	15	0	17	3	28	0
	70 - 80	8	23	11	36	11	28
	90 - 100	8	77	16	61	0	72

agonal respiration in 10 min	Total	100	100	100	100	100	100
Alert the emergency services following set protocol and initiate CPR without delay	10 - 20	31	0	16	0	56	0
	30 - 40	38	0	37	0	17	0
	50 - 60	15	0	23	2	11	0
	70 - 80	8	23	16	30	16	28
	90 - 100	8	77	8	68	0	72
	Total	100	100	100	100	100	100

h

e

h

t

a

h

h

h

a

h

t

h	**Pre-test**		**Post-test**	
s	Mean	SD	Mean	SD
a **Gender**				
s Male	39.6	20.1	91.3	9.5
s Female	47.3	19.7	92	7
t **Profession**				
a Doctors	44.9	16.1	94.8	6.6

n

a

n

Nurses	45.8	21	91.7	8.7
Healthcare Assistants	36.8	18	90.3	6.2
Experience				
1-3 years	45.4	23	90.87	6.8
4-6 years	41.2	16.7	92.6	8.5
7-9 years	48.89	24	91.6	8.0
10-12 years	51.17	27.9	93	5.8

h

e

h

e

a

h	**Variables**	**Mean**	**SD**
c	**Attitude pre-test**	43.94	20.2
h	**Attitude post-test**	91.95	8.2

c

simulation-based intervention. In the initial assessment, the ‘Attitude pre-test’ score of 43.94

r

e

s

a

s

Following the impactful simulation-based training, the ‘attitude post-test’ variable

Variables	n	Pre-test Mean	SD	Post-test Mean	SD	p-value
Doctors						
Knowledge	13	6.31	3.40	14.08	1.50	<0.001
Nurses						
Knowledge	63	6.51	3.14	13.60	2.32	<0.001
Healthcare Assistants						
Knowledge	18	6.28	3.52	14.39	0.91	<0.001

h

h

h

h

h

hVariables	n	Pre-test Mean	SD	Post-test Mean	SD	p-value
hDoctors						
Attitude	13	44.9	16.1	94.8	6.6	<0.001
Nurses						
Attitude	63	45.8	21.3	91.7	8.7	<0.001

a

a

a

a

Healthcare Assistants						
Attitude	18	36.8	18	90.3	6.2	<0.001

Chapter 05: Discussion

The chapter elaborates about the significant findings of the study with respect to the current literature available on knowledge and attitudes of healthcare providers regarding cardiopulmonary resuscitation. It will also explain strengths, limitations and recommendations for future research, clinical practices, and nursing education.

Globally, cardiovascular diseases (CVDs) constitute the primary cause of mortality. 32% of all fatalities worldwide in recent years were attributed to CVDs, with an estimated

Furthermore, it was also determined in this study whether simulation-based intervention influences knowledge levels and attitudes of the HCPs at a tertiary care hospital in Karachi, Pakistan.

.

h

Knowledge and Attitudes of Healthcare Providers Regarding Cardiopulmonary Resuscitation

The results of this study have shown that the baseline knowledge and attitudes of the HCPs are not adequate to successfully resuscitate a patient with cardiac arrest. However, consistent focus on healthcare providers education and trainings can have promising health

Focusing on the areas under study, it was evident that female participants had better baseline knowledge than those of males. Three studies from different healthcare settings

The current study explained well that nurses have better baseline scores than any other professional groups. Their knowledge scores also remained consistent on posttest results. Aranzabal et al. (2017), found that working in emergency ward, being a nurse and valid CPR certification were associated with good knowledge of CPR. The study setting had well established nursing education services (NES) department, which stringently to maintains credentials of the nursing staffs because the healthcare is a dynamic field, therefore, the

nurses are urged to pursue continual education and professional development to stay abreast of

There were three key findings in this study. First, all HCPs achieve an absolute 100% on posttest results in comprehending recommended rate of adult chest compressions per minute. Second, the least knowledge score after simulation was regarding the effectiveness of cardio cerebral resuscitation over cardiopulmonary resuscitation. The posttest scores of doctors were the lowest of all other groups, 77% of nurses was 86% and that of healthcare assistants was 94% A

It is alarming that the current study concluded that neither knowledge levels nor attitude scores of the HCPs were sufficient on pretest scores, which signifies that status of HCPs regarding CPR is concerning. Insufficient understanding might cause a delay in identifying the symptoms of cardiac arrest and starting CPR. In situations like these, time is of the essence, and any delay can drastically lower the likelihood of survival. Additionally, when faced with high-stress circumstances like cardiac arrest, confidence is essential.

Healthcare providers may hesitate and lack confidence, which can hinder their capacity to act quickly and efficiently in an emergency. There are several predisposing factors which are associated with HCPs insufficient knowledge and poor attitudes towards CPR; these include (a) lack of adequate and effective trainings, (b) limited exposure to real-life cardiac arrest

Strengths of the Study

- The burden of diseases and people dying from cardiac arrest is rising in Pakistan. This study helped to assess knowledge and attitudes of the healthcare providers regarding cardiopulmonary resuscitation in the local context, at a tertiary care hospital in Pakistan.
- The assessment tools used to carry out the study were specifically related to the area of interest of the study. The tools were previously used in studies with similar objectives. The 15-item knowledge-based questionnaire used in the study yielded high r e
- The study has further added a valuable work to the literature available on the same topic in Pakistan. The findings can be utilized for future research and interventions intended to improve the knowledge and attitudes of the HCPs regarding CPR.
- This study can be used for prospective studies to determine the retention and observe the changes in the knowledge and attitudes of HCPs regarding CPR in the longer run.

- Given that every setting has distinctive features, the current study can be adapted for other private and government setups for HCPs in both in-patient areas and out-patient areas to learn about the factors which influence their knowledge and attitudes.
- The results from this study can be used to formalize and develop frameworks to ensure all healthcare professionals who enter the medical profession must be certified to at least have sufficient knowledge, skills, and positive attitudes to work in an emergency satiation such as cardiac arrest etc.

Limitations of the Study

- Healthcare professionals from medicine wards were only made part of this study, however CPR is a skill which all healthcare providers should attain, therefore the data was restricted to a limited group of HCPs.
- The simulation-based intervention used in the study may not be applicable for all the hospitals as simulation lab is a rare facility in Pakistan, therefore generalization of the study is difficult to achieve.
- The study used a one-time posttest design. However, it is critical to know the knowledge and attitudes of HCPs in the for longer run to identify the retention of the learnt concepts.
- The current study was limited to determining the knowledge and attitudes of the HCPs, but assessing clinical practices of healthcare professionals in providing CPR to the patients is as important.
- The study did not include non-medical employees who are also part of healthcare setup and cardiac emergencies are unprecedented and unavoidable.

Recommendations

Listed below are the recommendations for the healthcare authorities for medical education, clinical practice, and future research to ensure safe and effective cardiopulmonary resuscitation services delivered by the healthcare providers.

Healthcare Professional Education

(A) Pre-Service Health Professional Education

- Basic life support should be made a part of the licensure and renewal process, for new and practicing health professionals.
- The medical authorities should make sure that CPR certification must be part of curriculum to ensure that all healthcare providers who enter the profession learn the important skill of CPR prior to them entering the real settings.
- The training programs must include all the personal, whether direct care or in-direct care givers to be prepared to combat the cardiac arrest scenarios. Therefore, it further implies that customized training programs should be implemented to align the required recourses in an appropriate direction.

(B) Continuing Education

- Continuous training and refresher must be carried out at regular intervals to help healthcare providers retain the concepts.
- The use of medical technology for these training should be utilized, which includes feedback devices, simulators, and video/audio recordings.

Clinical Practice

- All healthcare providers at work should have active cardiopulmonary resuscitation certification to deliver the services with legitimate credentials.
- The hospitals must have necessary devices, equipment and accessories which may be required to successfully deliver the recommended CPR services.

- The healthcare setups must foster a culture of constructive feedback to maximize learning for all healthcare providers.

Future Research

- More studies are needed to identify the baseline hands on practices of the healthcare providers.
- The future research must examine the barriers to CRP learning, training, and challenges to implementing the training programs. It should also cover the factors which influence adult learning of sensitive medical concepts.
- Additionally, the effectiveness of the current CRP training must be evaluated to bring about changes if required.
- Further studies should determine the impact of simulation-based CPR training and certification on knowledge, attitudes, and practices of the HCPs.
- A prospective study must be conducted to analyze the effectiveness of CPR training for better patient outcomes.

Conclusion

The study concluded that the healthcare providers baseline knowledge and attitude regarding cardiopulmonary resuscitation were not adequate. However, after educational intervention that is simulation exposure had significant improvement on knowledge and attitudes. Furthermore, it is of high importance to study the factors which improve knowledge and attitudes of healthcare providers towards CPR, and potential barriers to learning this crucial skill set.

Reference List

(1), 51–56.

(2), 114–121. https://doi.org/10.1016/j.rcae.2017.01.001

Brenton-Rule, A., Harvey, D., Moran, K., O'Brien, D., & Webber, J. (2021). Knowledge and

(3 suppl), 1603–1611. https://doi.org/10.21873/invivo.11950

, 43–50. https://doi.org/10.2147/amep.s114726

H

e

r

n

á

n

d

e

1). Factors influencing paramedics' and emergency medical technicians' level of

(

2

Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L.

(

3

4

,

39), 1174–1183. https://doi.org/10.1016/j.resuscitation.2013.04.016

(

Huber, M., Petrowski, K., & Greif, R. (2021). The effective group size for teaching

cardiopulmonary resuscitation skills – A randomized controlled simulation trial.

)

,

Oktay, V., Çıralı, İ. Ç., Baydar, O., & Sansoy, V. (2019). The knowledge and experience of

2

4

1

ersen, T. R., Mårtensson, J., Axelsson, Å., Jørgensen, M., Strömberg, A., Thompson,

–

D. R., & Norekvål, T. M. (2017). European cardiovascular nurses' and allied professionals' knowledge and practical skills regarding cardiopulmonary (4), 336–344. https://doi.org/10.1177/1474515117745298

Silverplats, J., Strömsöe, A., Äng, B. O., & Källestedt, M. S. (2022). Attitudes towards cardiopulmonary resuscitation situations and associations with potential influencing factors—A survey among in-hospital healthcare professionals. *PLOS ONE*, *17*(7),

Simulation noun - Definition, pictures, pronunciation, and usage notes | Oxford Advanced L (6), 573–574. https://doi.org/10.1017/s1049023x19005053 a

Tsao, C. W., Aday, A. W., Almarzooq, Z., Alonso, Á., Beaton, A., Bittencourt, M., Boehme, A. K., Buxton, A. E., Carson, A. P., Commodore-Mensah, Y., Elkind, M. S., Evenson, K. R., Eze-Nliam, C., Ferguson, J. F., Generoso, G., Ho, J. E., Kalani, R., Khan, S. S., Kissela, B. M., . . . Author_Id, N. (2022). Heart Disease and stroke statistics—2022 Update: A report from the American Heart Association. *Circulation*, *i n g*

K a r a c h

Table 1

Author(s) Name and Year of Publication	Purpose of Study
	To investigate current knowledge, attitude CPR quality control among emergency pl tertiary hospitals.
Alotaibi et al. (2016)	.
Rule et al. (2021)	T
Aranzabal et al. (2017)	
Kayadelen et al. (2021)	T e m a
Oktay et al. (2019)	

Mohammed et al. (2020)	T
Alkubati et al. (2022)	To assess the knowledge of nurses regardin Yemen.
Adal & Emishaw (2022)	T
Einav et al. (2017)	T (
Irfan et al. (2019)	T
Iqbal et al. (2021)	T
Majid et al. (2019)	T

Appendix A

Re: Need Access to Study Tool

Dear Dr Ayesha

Thank you for allowing me to access your tool for my study.

The findings from this tool will remain between me and my thesis supervisor.

Could you please guide me about the validity and reliability or CVI of the tool.

Thanking you once again.

Regards

From: ayesha iqbal <ayesha.iqbal.sims@gmail.com>
Sent: Thursday, March 30, 2023 8:43 PM
To: Nausheen Noorani <nausheen.noorani2@scholar.aku.edu>
Subject: Re: Need Access to Study Tool

Dear

Apology for inconvenience.

Kindly find the link of the study tool we used.

https://docs.google.com/forms/d/1BloqZymxg_p_Nhw98WVhOTHD3aCYP6HsrbMoYEUs-yE/edit?chromeless=1

Thanks and regards

Appendix B

Need Access to BRS-SES

Report

Nausheen Noorani May 10, 2023

Hope you are keeping well.

I saw your write up on Development and psychometric assessment of the Basic Resuscitation Skills Self-Efficacy Scale, and I found it very well formatted. I would like to use this tool in my research study, could you please guide me about how to get the access from the author.
I would be highly thankful to you.

Jose Manuel Hernandez-Padilla to you May 10, 2023

Dear colleague,

Thanks for your interest in the BRS-SES. Please, find attached a copy of the tool for your perusal.

Best of luck

BLS-AED Self-Efficacy Scale.pdf

Appendix C

آغا خان یونیورسٹی
THE AGA KHAN UNIVERSITY

23-Oct-2023

Dr. Khairulnissa Ajani Ajani
Department of School of Nursing and Midwifery
Aga Khan University
Karachi

Dear Dr. Khairulnissa Ajani Ajani,

2023-9097-26801, Khairulnissa Ajani Ajani: Using Simulation to Study Knowledge and Attitude Towards Cardiopulmonary Resuscitation Amongst Healthcare Providers: A Quasi Experimental Study

Thank you for submitting your application for ethical approval regarding the above mentioned study.

Your study was reviewed and discussed in ERC meeting. There were no major ethical issues. The study was given an approval for a period of one year with effect from 23-Oct-2023. For further extension a request must be submitted along with the annual report.

List of document(s) approved with this submission.

Submission Document Name	Submission Document Date	Submission Document Version
citiCompletionCertificate_6471125_34678114- Dr Ajani	14-Dec-2022	34678114
ERC- NIDA	31-May-2021	5
BLS-Self-EfficacyScale	29-Jul-2023	1
consent revised erc	29-Jul-2023	1
CMO LETTER	29-Jul-2023	1
CITI Dr. Faisal	07-May-2022	48797770
Data Collection Tool- Knowledge Questions	14-Oct-2023	2
Study Protocol revised- Latest-revised 14-oct	14-Oct-2023	2
ERC Response Sheet	14-Oct-2023	1

Any changes in the protocol or extension in the period of study should be notified to the Committee for prior approval. All informed consents should be retained for future reference.

Please ensure that all the national and institutional requirements are met.

Thank you.

Sincerely,

Dr. Shabina Ariff

Chairperson
Ethics Review Committee

Appendix D

آغا خان یونیورسٹی ہسپتال، کراچی
The Aga Khan University Hospital, Karachi

Stadium Road, P. O. Box 3500, Karachi 74800, Pakistan
Tel: +92 21 3493 0051
Fax: +92 21 3493 4294, 3493 2095
www.aku.edu

Dated: November 16, 2023

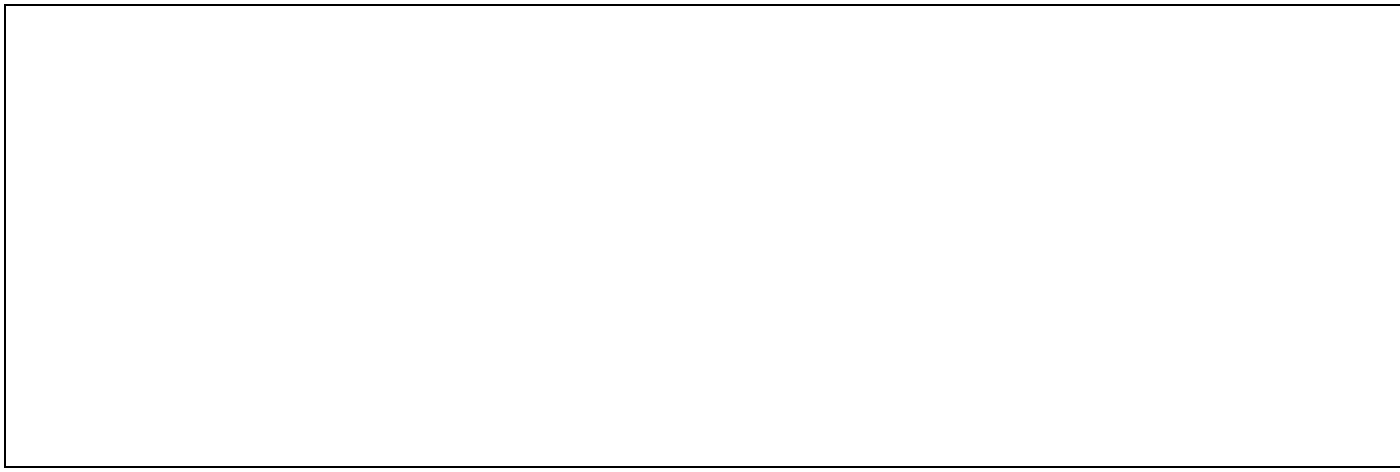
Title: "Using Simulation to Study Knowledge and Attitude Towards Cardiopulmonary Resuscitation Amongst Healthcare Providers: A Quasi Experimental Study."

Dr. Khairulnissa Ajani
Assistant Professor
AKUSONAM

As Chief Nursing Officer at the Aga Khan University Hospital, Karachi, I approve the above-mentioned study to be conducted within the Hospital, following required approvals and maintaining compliance with all institutional ethical and regulatory requirements.

Khairunnissa Hooda
Chief Nursing Officer, Nursing Services
Aga Khan University Hospitals

Appendix E



Appendix F

It will help the research team understand “what is the current knowledge and attitudes

o

H

o

w

e

v

e

r

,ı

c

a

r

c

e

p

t

Appendix G

Data Collection Tool

Knowledge Questions

Name: **Gender:** **Age:**

Designation: **Qualifications:**

01. what CPR in basic life support stands for?
    - Cerebro-pulmonary resuscitation
    - cardiopulmonary resuscitation
    - cardio peripheral resuscitation
    - cardiopulmonary rate

02. What is the location of hands for CPR in an adult?

- centre of chest
- right side of sternum
- left side of sternum
- Don’t know.

03. What is the depth of chest compression in adult?
- 3-cm
- 4-cm
- 5-cm
- 6-cm
- Don’t know

04. What is the rate of chest compression in adult per minute?
- 90-100
- 100-120
- 130-140
- Don’t know

05. What is the method for opening airway during CPR in a suspected case of head injury?
- head tilt-chin lift
- jaw thrust.
- Other:
- Don’t know.

06. How many mouth breaths do you have to give per minute during CPR in adults?
- 15
- 20
- 10
- 6
- Don’t know

07. What is the compression-ventilation ratio in an adult?
- 30:2
- 15:2
- 45:2
- 60:2
- Don’t know

08. Where is the "2 thumb-encircling hands technique recommended when 2 or more rescuers are present" used?

- child younger than 3 years
- a child older than 3 years
- an infant older than 1 year
- an infant younger than 1 year

- Don’t know

09. What is the position of fingers in infants during CPR?
- above nipple on left side
- below nipple on left side
- between nipple in centre of chest
- below nipple in centre of chest
- Don’t know

10. What is the depth of chest compression in infant?
- 4cm
- 5cm
- More than 10 cm
- Less than 4cm
- Don’t know

11. What is the rate of chest compressions in children per minute?
- 100-120
- 90-100
- 130-140
- Other
- Don’t know

12. What is the preferred mode for rescue breathing in infants?

- mouth to mouth
- mouth to mouth-nose
- mouth to nose
- Don’t know

13. What is the compression-ventilation ratio in infants with 2 or more rescuers?

- 30:2
- 15:2
- 45:2
- 30:1
- Don’t know

14. What should a rescuer give to potentially reduce the risk of gastric inflation?

- rapid, shallow breaths
- bag-mask device
- mouth to mask breathing
- each breath for 1 second
- Don’t know

15. Is CCR (cardio cerebral resuscitation) better than CPR?
- Yes
- No
- Don’t know

Appendix I

UNIVERSIDAD DE ALMERÍA

PARTICIPANT CODE: | | | | |

Middlesex University

Basic Life Support and Defibrillation Self-Efficacy Scale©

0	10	20	30	40	50	60	70	80	90	100
Completely sure I cannot do at all					Moderately can do					Completely sure I can do

	Confidence (0 -100)
In an emergency situation, I am confident I can always...	
Assess the safety of myself and the victim, in this order, before approaching	_____
Assess the victim's level of consciousness within 5 seconds	_____
Shout for help while continuing with the "Primary Survey"	_____
Open the airway by applying the most effective manoeuvre, depending on the situation	_____
Assess for breathing and differentiate between effective and agonal respirations in 10 seconds	_____
Alert the emergency services following set protocol and initiate CPR without delay	_____