IMPACT OF COVID-19 PANDEMIC ON PATIENT SERVICE DELIVERY AT A MIXED COVID MILITARY HOSPITAL

A Research Proposal submitted to the Panjab University, Chandigarh for the award of degree of Master of Philosophy in Social Sciences, in partial fulfilment of the requirement for the Advanced Professional Programme in Public Administration (2021-22)

Submitted by

BRIG (DR) MANOJ KUMAR

(Roll No 4711)

47th APPPA

under the guidance and supervision of

DR PAWAN KUMAR TANEJA

47th ADVANCED PROFESSIONAL PROGRAMME IN PUBLIC ADMINISTRATION

(2021-22)

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

NEW DELHI

CERTIFICATE

I have the pleasure to certify that the dissertation titled ***"Impact of COVID-19 Pandemic on Patient Service Delivery at a Mixed Covid Military Hospital"*** is a bona-fide research work carried out by Brigadier (Dr) Manoj Kumar under my guidance and supervision. The dissertation is a result of his own research and to the best of my knowledge no part of it has earlier comprised in other monograph, dissertation or book.

This is being submitted to the Panjab University, Chandigarh, for the award of Master of Philosophy in Social Sciences in partial fulfillment of the requirement for the Advanced Professional Programme in Public Administration (APPPA) of the Indian Institute of Public Administration (IIPA), New Delhi.

I recommend that the dissertation of Brigadier (Dr) Manoj Kumar is worthy of consideration for the award of M. Phil degree of the Panjab University, Chandigarh.

(Dr Pawan Kumar Taneja)

Professor
Indian Institute of
Public Administration
I.P Estate, New Delhi - 110002
Place: New Delhi
Date: 16 Mar 2022

CERTIFICATE

It is hereby declared that this submission is my original piece of work and to best of my knowledge and belief, it contains no material previously published or written by any other person. I am aware of the University's norms and regulations regarding the plagiarism including the disciplinary action that it may invite. Any use of the works by any another author, in any form, is adequately acknowledged at their point of use or in the Bibliography.

Date: 16 March 2022
Place: New Delhi

Brig (Dr) Manoj Kumar
Roll No 4711 (APPA-47)
Indian Institute of Public Administration
New Delhi - 110002

ACKNOWLEDGEMENT

I wish to express my sincere gratitude as well as appreciation to Dr. Pawan Kumar Taneja, Professor, Indian Institute of Public Administration, for his guidance in selecting and refining the topic as well as writing of this dissertation right from the beginning. He had provided his valuable contribution and supervision in all domains of the project since beginning to the end and has a keen interest in medical field related projects. Despite his hectic academic schedule and administrative commitments, he has spared his valuable time to steer my research work with experienced observations and perspective comments. He has also suggested relevant changes in the report to make it more useful. Without his guidance and encouragement, it would not have been possible to complete the dissertation with quality outcomes in such a limited time as this dissertation contains two sample surveys and one secondary database collection that got completed in a short time.

I am also very thankful to the healthcare workers of the armed forces at all levels and patients who participated in this survey who willingly parted with their views on the challenges faced and the state of services at this stage of the pandemic. My thanks are also to Air Cmde R Bhandari for very useful insight into the data statistical analysis.

I must very sincerely thank my wife Dr Mamata Chimmalgi and our daughter Miss Medha Kumar for their continued inspiration and steadfast telephonic reminders and help to collect collate and complete my dissertation in time!

Date: 16 March 2022
Place: New Delhi

Brig (Dr) Manoj Kumar
Roll No 4711 (APPA-47)
Indian Institute of Public Administration
New Delhi - 110002

DISCLAIMER

The findings, interpretations, views, recommendations and conclusions in the dissertation are those of the author, and should not be attributed in any manner to any authority, organization or individual.

Date: 16 March 2022
Place: New Delhi

Brig (Dr) Manoj Kumar
Roll No 4711 (APPA-47)
Indian Institute of Public Administration
New Delhi - 110002

LIST OF CONTENTS

Content	Page Number
Certificates	2
Acknowledgement	4
Disclaimer	5
List of Contents	6
Abbreviations	7
List of Tables	8
List of Figures	9
Executive Summary/ Abstract	10
Chapter I : Introduction to study: Impact of covid-19 pandemic on patient service delivery at a mixed covid military hospital	14
Chapter II : Methodology used in study and data sources	20
Chapter III : Review of Literature and overview of the covid pandemic	27
Chapter IV : Challenges faced by healthcare workers during the pandemic	48
Chapter V : Non-covid patient services and clientele satisfaction survey	75
Chapter VI : Results and Discussion of study	106
Chapter VII : Conclusion, limitations of study & Recommendations	156
References and Bibliography	166
Annexure	171

LIST OF ABBREVIATIONS

Acronym	Nomenclature
HCW	Health Care Worker
PSQ 18	Patient Satisfaction Questionnaire -18 (Short Form)
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
COVID-19/covid-19	Corona Virus Disease 2019
WHO	World Health Organisation
ICMR	Indian Council of Medical Research
CDC	Centre for Disease Control
PPE	Personal Protective Equipment
IMF	International Monetary Fund
OPD	Out Patient Department
SF-PSQ18	Short Form Patient satisfaction Questionnaire
RCT	Randomised Controlled Trial
RT-PCR	Reverse Transcriptase-Polymerase Chain Reaction
SARS	Severe Acute Respiratory Syndrome
MERS	Middle East respiratory syndrome

LIST OF TABLES

TABLES	Page Number
Constructs of HCW questionnaire Table 2.1	25
Constructs of PSQ18 Table 2.2	26
Grouping of questions as constructs for HCW questionnaire Table 4.1	52
Hospital workload annual data Table 5.1	77
Workload of departments annual Table 5.2	78
Reduction in total outpatient numbers of three years Table 5.3	79
Changes in workload for various departments from 3-year average pre-covid Table 5.4	81
Results and discussion of HCW questionnaire Table 6.1 to Table 6.8	107 to 131
Results and discussion of PSQ18 questionnaire Table 6.9 to 6.15	137 to 149

LIST OF FIGURES

FIGURES	Page Numbers
Flattening the pandemic curve Fig 3.1	32
Responses to HCW questionnaire arranged as per constructs Fig 4.2 to Fig 4.25	53 to 74
Trend of outpatient workload Fig 5.1	78
Reduction in total outpatient numbers of three years Fig 5.2	79
Trend of emergency room visits pre-covid and covid Fig 5.3	80
All-cause hospital deaths Fig 5.4	81
Trend of large specialist OPDs Fig 5.5	83
Responses to PSQ18 Fig 5.6 to Fig 5.29	86 to 105
Results and discussion of HCW survey Fig 6.1 to 6.10	106 to 131
Results and discussion of Changes in non-covid numbers Fig 6.11 to 6.13	132 to 136
Results and discussion of PSQ-18 survey Fig 6.14 to 6.22	139 to 154
Ranking of constructs HCW survey Fig 6.1 reproduced	157
All cause in-hospital mortality from 2017	161
Ranking & Scoring on constructs PSQ18	163

ABSTRACT

Executive Summary

Key Words: Health care workers, Patient Satisfaction Questionnaire 18, Missing non-covid patients, Stress factors for healthcare workers

Pandemics like the current one caused by the Corona virus disease 2019 (COVID-19) occur once in a century but has the potential to cause unexpected unprepared physical strain on the health care delivery system of even the best prepared nations. These events especially stretch the otherwise fragile health ecosystem of the developing nations with large populations and scarce resources. The pandemic changed the existing fine-tuned healthcare apparatus with newer workplace and societal stressors for the healthcare personnel in addition to challenges for the patient population in terms of access and availability of hospital services The purpose of this study has been threefold -- to identify the antecedents of workplace and societal challenges faced by the healthcare personnel; document the reduction in non-covid cases that occurred due to the restrictions and prioritization towards covid cases; and finally to look at the hospital services offered at the present stage of the pandemic in terms of patient feedback. The adaptation to the pandemic caused a lot of challenges to the health care workers at different levels and hence this study has adopted a multi-stakeholder approach and therefore addresses healthcare workers at all levels.

The research objectives of the study were:

1. *To study the challenges encountered by health care workers during the COVID-19 pandemic in terms of workplace, resource, societal and domestic issues.*

2. *To study the changes in hospital services availed by non-covid clientele during the pandemic at a mixed covid hospital in terms of reduction in patient numbers.*

3. *To study the perceived satisfaction level of existing hospital services at the current stage of the pandemic using modified standard questionnaire*

The research method was quantitative in nature with two elaborate questionnaires with scoring used for the first and the third objectives. The questionnaires were distributed to healthcare workers at all levels actively involved during the pandemic and are limited to the military hospitals. Similarly the Patient Satisfaction Questionnaire using modified PSQ18 was directed towards patients of various secondary care military hospitals. The second objective was studied based on secondary data from a single large secondary care hospital and looked at the missing non-covid clientele and hospital data between Jan 2020 to Mar 2021.

Study of the challenges faced by healthcare workers (n-159) showed that various aspects such as fear of disease transmission, resource constraints at workplace, community and societal indifference, changes in essential supplies, frequently changing covid treatment guidelines and other administrative workplace factors are indeed stressors to the healthcare worker. Many of these are as stressful as the fear of the unknown disease. Researchers need to look at all the environmental, social and economic factors including medical issues like frequently changing guidelines of management to arrive at a complete picture.

Our study showed that there was significant reduction in non-covid numbers in the outpatient departments of general as well as specialist departments leading to a total reduction of 42 to 44 percent from the previous three year data. This study did not corroborate with the oft-repeated statement of reduction in emergency room visits and

admissions. The study also found the in-hospital mortality numbers of non-covid cases uniform unchanged from those of the previous three years.

The feedback from 174 patients regarding the return of hospital services at the current stage of the pandemic has been especially encouraging with very high satisfaction rates reported. A waning second wave of the pandemic coupled with increasing vaccination coverage could have contributed to this in addition to the post-pandemic positive overhaul brought about in the healthcare system by an attentive leadership and effective healthcare worker community. Patient satisfaction is a major issue for healthcare delivery and this is best achieved by an early return to routine medical care with all due precautions during a waning pandemic. Our patient-clientele have expressed their satisfaction of a high level across age and gender and the medical fraternity needs to acknowledge this as well as keep the flag flying high. Multi-tasking and cross employment of healthcare workers across specialties and training them to combat covid has paid rich dividends as seen by a low mortality rate and success of immunization.

Owing to man-animal proximity and climate change it is predicted that pandemics may not be an infrequent phenomenon in the decades to come. We need our healthcare workers to be well prepared, supported by society and adequately resourceful--both organizationally and individually—to reduce morbidity and mortality of such invisible foes. The training lessons learnt during this pandemic will come handy professionally as well as administratively for the health care sector. We now know the extent to which triage of cases need to be done, we are prepared as a society for video-consultations and tele-consultations and we have a fair idea to isolate and manage by both quarantine and reverse-quarantine of the susceptible.

This is a success lesson for our leadership of the day--- while studying the pandemic and its effects on us, it is also critical to review the things that our organisation and nation as a whole did successfully to control the pandemic. A lot of our success at this stage has been built on the importance of attentive leadership, the need to ensure that people have enough provisions and financial means to follow public-health guidance, and a shared understanding that individuals and communities must contribute effectively to protect the well-being of its people. The very fact that our healthcare workers in the survey did not feel stressed over allotment and adequacy of resources speaks positively about the leadership and its reach in healthcare sector!

Chapter I

INTRODUCTION TO THE STUDY: IMPACT OF COVID-19 PANDEMIC ON PATIENT SERVICE DELIVERY AT A MIXED COVID MILITARY HOSPITAL

Introduction

Pandemics like the current one caused by the Severe Acute Respiratory Syndrome Coronavirus 2 virus causing the Corona virus disease 2019 (COVID-19) happen infrequently but tend to cause an unexpected unprepared physical strain on the health care delivery system of even the best prepared nations. These events stretch the otherwise fragile health ecosystem of the developing nations with large populations and scarce resources. The sudden emergence of COVID-19 posed a new threat to the already burdened healthcare system. The pandemic changed the healthcare paradox with newer workplace and societal challenges faced by the healthcare personnel. The purpose of this study has been to identify the antecedents of workplace and societal challenges faced by the healthcare personnel. The adaptation to the pandemic caused a lot of challenges to the health care workers at different levels.

The changes and restrictions brought in by the medical as well as the administrative authorities in order to contain the pandemic also limited the care given to the regular non-covid cases since preference was given to the pandemic cases and this study looks at the extent of deficiency caused. Any change in the non-covid clientele of a healthcare setup when compared to the past figures would give an estimate of the reduction in numbers.

At the present stage of the pandemic with a waning second wave sometime back and uncertainty of future infections the status of the clinical services offered by hospitals can

be assessed by impact of covid on patient service delivery and this study brings out the same.

Statement of The Problem

This study is an attempt to study the impact of covid on patient service delivery from three aspects:

(a) **Challenges faced by health care workers**: It is well understood by all of us that health care workers routinely face challenges and risks to their health at all times even during the normal course of their work. However the pandemic strained the existing health information, training and knowledge base to an entirely different extent. Not only were the health workers stressed by facing the disease directly but also in terms of coping skills due to patient attrition; unexpected societal pressures and changing social attitudes; hitherto-unseen resource constraints at workplace and other domestic stressors. Most studies have documented only the *mental state* of the health worker faced with the situation and have not focused on aforementioned factors. Therefore a study of the **challenges faced by the health care workers** during the second wave of COVID-19 pandemic is also part of the study we have carried out.

(b) **Missing non-covid clientele**: It was seen during the pandemic that the number of regular non-covid patients changed in numbers as compared to the regular number of patients seen at a general hospital. These changes occurred due to varying causes like patient concern or fear of the unknown disease, administrative restrictions to control spread of disease and priority shown by health care workers towards COVID cases more than non-covid cases. The change in number of cases when compared with previous years would indirectly reflect the deficiency in services that occurred due to the pandemic and this study has recorded the same at a secondary care multispecialty hospital.

(c) **Patient Experience of Service Delivery**: Services were restricted at hospitals due to the conditions enforced by the pandemic including periodic lockdowns from April 2020 till the past few months. At the present stage of pandemic when the second wave has waned sometime back , vaccinations have started covering a significant part of the population and knowledge regarding the pandemic and disease has somewhat crystallized down to facts, this study looks at the **current satisfaction levels in patients towards hospital services using a validated standard questionnaire with minor modifications.** Literature is limited regarding post-covid patient delivery services level of restoration at the current stage.

Research Objectives

1. To study the challenges encountered by health care workers during the COVID-19 pandemic in terms of workplace, resource, societal and domestic issues.
2. To study the changes in hospital services availed by non-covid clientele during the pandemic at a mixed covid hospital in terms of reduction in patient numbers.
3. To study the perceived satisfaction level of existing hospital services at the current stage of the pandemic using modified standard questionnaire**.**

Rationale of the Study

1. Healthcare workers faced multiple challenges in the form of stressors related to their workplace, societal and domestic including financial issues during the past eighteen months. However most studies have considered the issues of mental health alone (clinical anxiety/depression) and have focused on patient concerns and fear of the pandemic. There exists a need to highlight aforementioned added factors such as societal pressures and attitudes, resource constraints at workplace and other domestic stressors too by addressing a larger group of healthcare workers at all levels.

2. The pandemic along with its administrative restrictions including extended lockdown along with the concern regarding covid lead to a decline in the number of non-covid cases accessing healthcare services. This was despite the extensive use of technology to assist patients remotely. However most studies have focused on emergency department admissions or deficiency in select mostly private sub-specialty centres and focus on figures in the range of 40 percent reduction in numbers. This study plans to address the deficiency in numbers in a multispecialty general hospital providing secondary care to get a wider perspective in a central funded hospital where finances are not a concern. As this hospital has general OPDs as well as all broad specialties (with the exception of orthopaedics), it is felt that more realistic numbers will emerge.

3. Healthcare service delivery was interrupted during the pandemic and all efforts have been made to restore these services especially to non-covid elective clientele. Literature is replete with health service delivery literature but has very little information on these numbers after the covid second wave and spread of vaccination. Hence this study looks at the current state of service delivery status in terms of patient satisfaction using questionnaire.

Research Questions

1. What are the perceived challenges faced by health care workers at different levels working in the COVID-19 hospital during the current pandemic?

2. What are the workplace challenges faced by healthcare workers during the pandemic?

3. What are the domestic and societal stressors faced by the healthcare workers during the pandemic?

4. What are the challenges faced by the health care workers due to resource availability and administrative support?

5. What is the likely number of non-COVID cases that did not visit the hospital during the pandemic as seen from the previous years' trends?

6. What is the overall satisfaction level regarding service delivery among patients in the current stage of the pandemic?

Scope and Limitations of the Study

This study is limited to the data from military hospitals and patients visiting these hospitals at the time of collecting information. The health care workers also belong to the armed forces hospitals only or are working with the armed forces hospital on the date of the questionnaire.

The study has brought out the missing non-covid clientele from multispecialty general hospital for which hospital-based data is currently unavailable in our country as well as objectively document the societal and workplace challenges faced by healthcare workers of different strata including hospital administrators.

This study is discussed under the following heads chapters

Chapter I: Introduction to the study: Impact of Covid-19 Pandemic on Patient Service Delivery at A Mixed Covid Military Hospital

Chapter II: Methodology used in the study

Chapter III: Review of literature including an overview of the pandemic

Chapter IV: Challenges faced by healthcare workers during the pandemic

Chapter V: Non-covid patient services and clientele satisfaction survey

Chapter VI: Results and discussion of the study

Chapter VII: Conclusion, limitations of study and recommendations

References and Bibliography

Annexures

Chapter II

METHODOLOGY USED IN THE STUDY AND DATA SOURCES

The method of research used in this study is that of a Quantitative method.

Research Strategy

Quantitative Research Strategy is used for the study.

1. A cross-sectional study using a questionnaire for perceived challenges faced by health care workers at different levels working in the COVID-19 hospital and analysis of the results. **Sample of 50 health care workers was planned. A total of number of 159 was achieved.**

2. Analysis of the secondary data regarding service deficiency of non-covid cases depending on past data of a military hospital in Western India.

3. A cross-sectional study using modification of standard questionnaire PSQ-18 for perceived satisfaction levels of patients and analysis of the results. **Sample size of 100 plus patients or more was planned. A total number of f 174 was achieved.**

Research Design And Research Tools

1. Multi-stakeholder approach is used in this study such that **data is collected from all levels of healthcare professionals** (specialists, super-specialists, medical officers and nursing staff); data from clientele patients regarding service delivery issues. Study involves collection of in-depth data through use of anonymised electronic questionnaires from workers at all levels of service delivery.

Primary data addresses healthcare workers at all levels regarding challenges faced during the pandemic. **Questionnaire to health care workers** of hospitals through online method was administered to record the challenges faced by them during the first and second wave of pandemic. The health care workers included doctors of all broad specialties, super-specialists, medical officers and health administrators involved with covid management as well as nurses who are willing to participate.

2. **Questionnaire to patients for satisfaction levels** perceived at the current stage of the pandemic using **modified standard questionnaire PSQ-18**. The PSQ18 is a validated standard questionnaire used for patient satisfaction surveys. Suitable modification has been made to the questionnaire to avoid questions regarding finances as the services delivered at these governments funded hospitals are completely free of charge. These two questions were replaced by questions regarding covid containment services being observed in the hospital which had more relevance and was of concern to the patient-clientele.

3. **Secondary data of hospital clientele admission and outpatient numbers** of pre-covid in the past three years as well as data during the pandemic was painstakingly collected and analyzed to address service deficiency issues for regular non-covid cases at a military hospital in western India. The past data was be used to extrapolate and find the number of non-covid patients that should have visited the hospital in the absence of the pandemic. The changes thus observed would be recorded for the hospital as absence of non-covid cases.

Additional secondary data sources of research included on a need basis:

(a) Research papers and other articles published in the field by various authors till Sep 2021.

(b) Data of WHO and/or ICMR New Delhi available on the subject in public domain till Sep 2021.

(Copy of questionnaires used is attached as Annexure I to Annexure III)

Challenges faced by healthcare workers: A cross-sectional prospective study was done using a questionnaire for perceived challenges by healthcare workers at different levels. The health care workers included nursing staff, doctors, postgraduate residents, super-specialists and health administrators and supervisors who worked in some capacity in the healthcare sector during the COVID pandemic. A questionnaire was prepared that included all likely causes of perceived stress in the form of workplace stress factors, societal and domestic stress factors, stress factors due to resource limitation and distribution including financial and personal factors of health and wellness. Copy of the questionnaire is described as Annexure I.

The questionnaire was distributed electronically using MS Forms after including demographic data and consent as the initial part. All questions were mandatory for submission of the electronic form. A choice was given to either specify name or initials to maintain anonymity of healthcare worker. Most health care workers have however provided their names. The distributions of electronic forms were done in different hospitals so as to include all sub-groups of healthcare workers including nursing staff. A target of fifty was committed initially though we finally received 159 responses. Data was obtained in Dec 2021 and first week of Jan 2022. By this time the second wave of covid had long passed and vaccinations were underway. A newer omicron variant was beginning to show its presence in a milder form.

Analysis of the secondary data regarding service deficiency of non-covid cases depending on past data of a military hospital in Western India. Secondary data for this was collected from the hospital records from the stats department. No personal data or names of any patients or their dependents were collected or recorded and only centralized data on number of patients in OPDs and in-patients and various departments were perused. The author of this study had commanded a 345 bedded zonal hospital in Western India and all data pertaining to the covid pandemic years were collected from 01 Jan 2020 till 31 Dec 2020 and subsequently till 31 Mar 2021 for next year. The aim of this secondary data was to find out the decline in non-covid cases as out-patients, in-patients and patients in specific specialty as well as changes in the workload in surgeries. The assumption is that the decline in non-covid cases during the pandemic reflects the missing non-covid clientele due to various reasons. The secondary care zonal hospital has all departments and major specialties with the exception of orthopaedics.

Patient satisfaction levels at the present stage: This was again a prospective cross-sectional questionnaire based study that was bilingual in nature keeping the requirements of patients in mind. The questionnaires were distributed using MS Forms through mobile devices of both out-patients as well as in-patients of different hospital based in northern, western and southern parts of the country. All hospitals were secondary care hospitals with general OPDs and almost all major specialties.

This study was carried out using the standard Short Form Patient Satisfaction Questionnaire PSQ-18. The questionnaire is a well established and standardised questionnaire used in the field of medicine to assess patient satisfaction in hospital settings.

Patient Satisfaction Questionnaire Short Form (PSQ18) was originally developed by RAND Healthcare organisation of the USA as a shortened form of original PSQ. The initial PSQ was an extensive and cumbersome model with more than 80 responses in the initial forms and subsequently about 50 responses in PSQ-III and was the precursor for the short form PSQ18 developed by Willis H. Ware and his colleagues (Ware, Snyder, and Wright, 1976).

The PSQ-18 is a short form version that retains many characteristics of its full-length counterpart. The PSQ sub-scales show acceptable internal consistency and reliability. Furthermore, corresponding PSQ-18 and PSQ-III subscales substantially correlate with one another. The PSQ-18 is found appropriate for use in situations where the need for brevity and a larger audience precludes administration of the full-length PSQ-III. The PSQ-18 takes approximately 3-4 minutes to complete. (Ware Synder 1976).

The standard Short Form PSQ18 contains 18 questions covering seven dimensions for satisfaction from medical care namely **general satisfaction; technical quality; interpersonal matter; communication; time spent with doctor; financial aspects and accessibility and convenience.** Of these parameters the financial parameter was not of consequence in government funded hospitals where this study was done. Instead these two questions were replaced with questions related to pandemic such as covid –preventive and containment measures observed by the patient. Thus these questions replaced questions at numbers 5 and 7 in the PSQ-18 used by us.

The replaced questions were Q No 5 and Q No 7 both of which pertains to financial aspects of medical care that were irrelevant to a military hospital since all costs including food and clothing is borne by the organisation.

The modified PSQ18 is described in Hindi and English towards the end of this dissertation (Annexures II and III). A sample size of 100 was planned and a sample size of 174 was obtained from patients in all parts of the hospitals. Consent was obtained and option to declare name or initials were also provided for uninhibited feedback of service availability at the current stage of the pandemic. The data was obtained in Dec 2021.

Use and interpretation of the questionnaires

The questionnaire used for the HCW has all questions graded between 'Strongly Agree' and 'Agree' to 'Disagree' and 'Strongly Disagree' with a 'Neutral' response option thereby giving five options to the responder. After obtaining the responses these options were numbered from 5 through 1 respectively with a value of 3 assigned for the neutral response. At the time of analysis an average or mean score for each question could be calculated. For the sake of analysing a higher score has been kept for greater conformity with the question. These questions were grouped together in order to evaluate each parameter as shown below Table 2.1

Table 2.1: Constructs of HCW questionnaire

Sl No	Constructs HCW	Questions No
C-1	Fear of disease or transmission	1
C-2	Social or community relationships and adaptiveness	2,3,18
C-3	Essential services availability	4,14
C-4	Resource availability, adequacy and allotment	5,6,7
C-5	Changing guidelines	10
C-6	Administrative support, training	8,9,12,17
C-7	Biomedical waste	13
C-8	Physical/mental fitness	11,15,16

In a similar way the modified PSQ18 being a standard questionnaire has the following groupings for each desired parameter of patient satisfaction (Annexure-II &III)

Table 2.2: Constructs of PSQ18

	CONSTRUCTS	**AVERAGE OF THESE SCORES**
C-1	General Satisfaction	3,17
C-2	Technical Quality	2,4,6,14
C-3	Interpersonal Matter	10,11
C-4	Communication	1, 13
C-5	Covid Preventive Aspects	5,7
C-6	Time Spent With Doctor	12,15
C-7	Accessibility and Convenience	8,9,16,18

Chapter III

REVIEW OF LITERATURE

Overview of the Covid-19 Pandemic, Its Implications on Healthcare Efforts and the Current Status of the Pandemic

The COVID-19 pandemic, also known as the corona virus pandemic, is an ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was first identified in December 2019 in Wuhan, China. The outbreak was declared a Public Health Emergency of International Concern in January 2020, and a pandemic in March 2020. The disease caused by the SARS-CoV-2 virus is known as coronavirus disease 2019 – or COVID-19. The first confirmed case is India was from Kerala in last week of Jan 2020.

Origin and attention to the pandemic: A cluster of pneumonia cases of unknown origin were reported in Wuhan on December 31, 2019 which were all linked to the local seafood wholesale market of Wuhan where a variety of live and deceased exotic wildlife, including live bamboo rats, palm civets, badgers, and wolf cubs are usually available and sold. Within a few days, the offending agent was identified as a novel coronavirus (2019-nCoV) and WHO issued a warning on 19th January 2020 that the virus may spread from human to human. Human to human transmission was thus suspected by Jan 2020! (European Centre for Disease Prevention and Control—Fourth update. 14 February 2020. Retrieved 08 Nov 2021)

WHO designated this infection as a Public Health Emergency of International Concern (PHEIC) on January 30, 2020, and this outbreak was designated as a pandemic on March 11, 2020. SARS-CoV-2 is a Coronaviridae virus that is positive-stranded and enveloped. Because the presence of spike glycoproteins on the envelope gives it a crown-like look

under an electron microscope, the family gets its name from the Latin word *coronam* which means "to crown."

Corona-viridae family consists of various viruses which can infect humans and several other animal species including domesticated dogs and several of these human corona viruses have been identified till date. The incubation period of the virus is within three to seven days (median 5.1 days, similar to SARS and up to 2 weeks as the longest time from infection to symptoms was 12.5 days (95% CI, 9.2 to 18). The World Health Organization (WHO) declared this a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020. As of last week of February 2022, the pandemic had caused more than 433 million cases and 5.95 million deaths, making it one of the deadliest in history. (https://www.worldometers.info/coronavirus COVID-19 Virus pandemic figures worldwide. Accessed updated 26 Feb 2022)

Fever, dry cough, and exhaustion are the most prevalent COVID-19 symptoms, which can range from undetectable to fatal. Patients who are elderly or have specific underlying medical issues are more likely to experience severe sickness. COVID 19 is spread through the air when droplets and small airborne particles harbouring the virus are inhaled. Breathing them in is most dangerous in terms of chances of contamination /infection when individuals are close together, but they can also be inhaled over greater distances, especially indoors. Various studies have documented spread of covid through indoor air-conditioning vents too using simulation studies keeping human safety at heart. (Liu H, He S, Shen L, & Hong J 2021).

Transmission can also occur if contaminated fluids reach the eyes, nose or mouth, and, rarely, via contaminated surfaces. Infected persons are typically contagious for 10 days, and can spread the virus even if they do not develop symptoms. Mutations have produced many strains (variants) with varying degrees of infectivity and virulence. However current

research indicates that transmission through fomites in daily life is less of a concern than respiratory route. (Mondelli et al 2021)

The WHO classifies stages of a pandemic into six phases as follows:

Phase 1: The period during which no animal viruses are reported to cause infection in humans.

Phase 2: The first level of threat wherein a virus is confirmed to have transmitted from an animal to humans.

Phase 3: When sporadic, intermittent cases or small clusters of the disease are confirmed, but transmission from a human to another human has either not occurred or is not considered to continue to an outbreak.

Phase 4: The point in the disease where either human to human transmission or a human to the animal virus has caused an outbreak widely among a community.

Phase 5: When human to human transmission of the virus has caused the spread of disease to at least two countries.

Phase 6: It is the point at which the disease has been declared a pandemic that has spread to at least one other country. The duration for each phase can vary considerably, ranging from months to decades.

The scientific consensus is that the virus is most likely of zoonotic (animal origin) origin, from bats or another closely-related mammal (Hu et al 2021).

Effects of the Pandemic and Epidemiology

The pandemic triggered severe social and economic disruption around the world, including the largest global recession since the Great Depression. Supply chain disruption and panic buying produced widespread supply shortages, including food shortages. As a

result of the near-global lockdowns, pollution levels dropped to levels never seen before. (IMF Blog 14 Apr 2020)

In numerous jurisdictions, educational institutions and public areas were partially or completely shuttered, and many activities were cancelled or postponed. Political tensions grew as misinformation spread through social media and the mainstream media. The pandemic brought up concerns of racial and geographic discrimination, health equity, and finding a balance between public health and individual rights.

On 9 April 2020, preliminary results found that in Gangelt, the centre of a major infection cluster in Germany, 15 percent of a population sample tested positive for antibodies. Screening for COVID-19 in pregnant women in New York City, and blood donors in the Netherlands, found rates of positive antibody tests that indicated more infections than reported. Seroprevalence-based estimates are conservative as some studies show that persons with mild symptoms do not have detectable antibodies.

An analysis in early 2020 of cases in China by age indicated that a relatively low proportion of cases occurred in individuals under the age of twenty years. It was not clear whether this was because young people were less likely to be infected, or less likely to develop symptoms and be tested. A retrospective cohort study in China found that children and adults were just as likely to be infected.

The basic reproduction number (R0) for COVID-19 was first estimated to be between 1.4 and 2.5 in January, but a subsequent analysis found varied numbers in different situations.

The number of cases continued to rise in December 2021, owing to a variety of reasons, including new COVID-19 variations. As of the 28th of December 2021, around 282,790,822 people had been confirmed as infected around the world. As of 6 February 2022, more than 5.73 million deaths had been attributed to COVID-19. The first confirmed death was in Wuhan on 9 January 2020. These numbers vary by region and

over time, influenced by testing volume, healthcare system quality, treatment options, government response, time since the initial outbreak, and population characteristics, such as age, sex, and overall health.

Mortality is quantified using a variety of methods. People who died after testing positive are usually included in official death numbers. Without a test, such counts exclude deaths. Deaths of people who died from underlying diseases after a positive test, on the other hand, may be included. Deaths from suspected cases, even those without a test, are counted in some countries, such as Belgium.

The time between symptom onset and death ranges from 6 to 41 days, typically about 14 days. Mortality rates increase as a function of age. People at the greatest mortality risk are the elderly and those with underlying co-morbidities. Another metric in assessing death rate is the case fatality ratio (CFR) which is the ratio of deaths to diagnoses. This metric can be misleading because of the delay between symptom onset and death and because testing focuses on symptomatic individuals. (Yanez, Weiss and Romand 2020).

Based on Johns Hopkins University statistics, the global CFR is 1.46 percent (5,734,564 deaths for 393,290,814 cases) as of 6 February 2022. The number varies by region and has generally declined over time.

Many governments attempted to restrict or stop the spread of COVID-19 by advocating, demanding, or prohibiting behavioural adjustments, while others relied solely on information. The measures varied from public warnings to complete lockdowns. There are two types of outbreak control strategies: elimination and mitigation. Experts distinguish between elimination tactics, which try to entirely stop the virus from spreading inside the community, and mitigation strategies, which strive to mitigate the virus's impacts on society while still allowing some transmission within the community.

Mitigation strategies of “flattening the curve of the pandemic” thereby giving time for the governments to build more resources or fortify the existing health care set up was widely followed. This strategy may have contributed in reducing the load on health care settings both in the developed as well as the developing countries. Nature reported in 2021 that 90% of immunologists who responded to a survey in 2020 believed that the coronavirus will become endemic. (Phillips 2021)

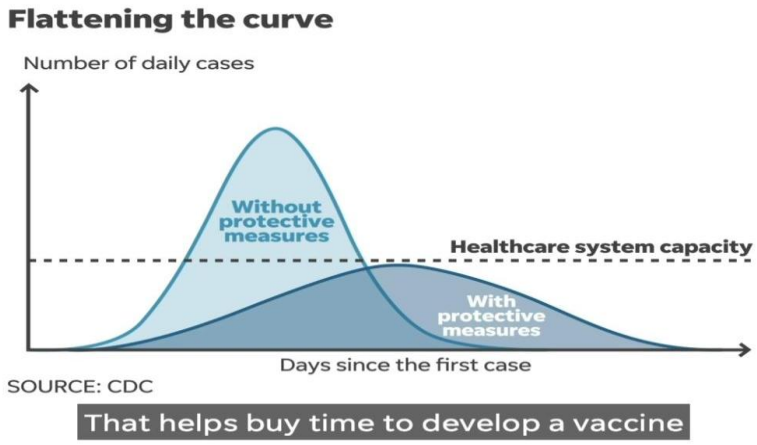


Fig 3.1: Flattening the pandemic curve to prevent overwhelming healthcare facilities

Extensive importance was placed on hand sanitisation, social distancing, use of facial mask, repeated lockdowns as well as community restrictions and such other non-pharmaceutical measures to reduce the rate of transmission. These factors did help in containing the first wave to a large extent and possibly helped prepare better for the second wave. Role of the governments and administration at all levels helped mitigate and flatten the curve depicted in Fig 1.1 above.

Covid Pandemic in India

The COVID-19 pandemic in India is a part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As on 20 January 2022, according to official figures, India has the

second-highest number of confirmed cases in the world (after the United States of America) with 42,080,664 reported cases of COVID-19 infection and the third-highest number of COVID-19 deaths (after the United States and Brazil) at 501,114 deaths. These numbers also reflect the extensive testing facilities that India developed over a short duration of time.

The first cases of COVID-19 in India were reported on 29 January 2020 in three towns of Kerala, among three Indian medical students who had returned from Wuhan, the epicenter of the pandemic. Lockdowns were announced in Kerala on 23 March 2020 and in the rest of the country on 25 March 2020. On 10 June, India's recoveries exceeded active cases for the first time. Infection rates started to drop in September, along with the number of new and active cases. Daily cases peaked mid-September with over 90,000 cases reported per-day, dropping to below 15,000 in January 2021. A second wave beginning in March 2021 was much more devastating than the first, with shortages of vaccines, hospital beds, oxygen cylinders and other medical supplies in parts of the country. By late April, India led the world in new and active cases. On 30 April 2021, it became the first country to report over 400,000 new cases in a 24-hour period. Experts stated that the virus may reach an endemic stage in India rather than completely disappear; in late August 2021, Soumya Swaminathan of ICMR said India may be in some stage of endemicity where the country learns to live with the virus.

India began its vaccination programme on 16 January 2021 with AstraZeneca vaccine (CoviShield) manufactured by the Serum Institute of India and the indigenous Covaxin developed by Bharat Biotech. Later, Sputnik-V and the Moderna vaccine was approved for emergency use too. As of 8 January 2022, the country had administered over 1.5 billion vaccine doses. On 21 October 2021, at 9:47 AM according to the Co-WIN portal, India crossed 100 crore (1 billion) doses indicating perhaps a change for the better!

Literature Review

A detailed literature review was carried out to identify, evaluate and interpret the work carried out by researchers and scholars on the subject matter of the research problem and to identify the research gaps. The details of the literature survey carried out are enumerated below:

Sengupta M et al (2021). Challenges Encountered by Healthcare Providers in COVID-19 Times: An Exploratory Study. Journal of Health Management. This study was an attempt by the authors to identify the antecedents of workplace and societal challenges faced by the healthcare personnel. Study was conducted in Kolkata and other adjoining areas of West Bengal included respondents who volunteered for individual in-depth interviews. The sample size was kept at n = 20 only after due technical considerations. The study mentions multiple societal and workplace challenges faced by the health care workers of the region. Limited sample size was the main drawback of the study. The advantage of this study is that it is one of the first studies that have looked at stress factors in its entirety instead of focusing on mental health alone in the covid pandemic times.

SantiI L et al (Dec 2020). Non-COVID-19 patients in times of pandemic: Emergency department visits, hospitalizations and cause-specific mortality in Northern Italy. The aim of this study was to assess the impact of the pandemic on nonCOVID-19 patients living in a one-million inhabitants' area in Northern Italy (Bologna Metropolitan Area-BMA), analyzing time trends of Emergency Department (ED) visits, hospitalizations and mortality. This was a retrospective observational study that documented the pandemic causing a sudden drop of ED visits and hospitalizations of non-COVID-19 patients during the lockdown period, and a concurrent increase in out-of-hospital mortality mainly driven

by deaths for neoplasm, cardiovascular and endocrine diseases. During the lockdown period the overall reduction in ED visits compared to same period of the previous year was -66.2%. The highest decrease was observed in pediatric patients during lockdown (-83.2%), although even adults and elderly patients ED accesses declined by 62.9% and 64.0%, respectively. The authors found a significant increase in out-of-hospital mortality, particularly during the lockdown weeks (43.2%) whereas in the pre-lockdown period and in the post-lockdown period no remarkable changes were identified. A concurrent reduction of in-hospital mortality was observed. However the study is a Northern Italian study with vastly different health care system and infrastructure. The authors also state that probably due to under-diagnosis of COVID and its complications there might have been higher non-COVID mortality in the study.

Nazli GK and Celal Gunes (July 2020). How has Covid-19 pandemic affected crowded emergency services?(July 2020) Int J Clin Pract. The authors have investigated the demographic shifts in emergency service admissions, possible measures and room for improvement in emergency services during the Covid-19 pandemic. This study has retrospectively analysed the demographic features and clinical admission types of patients admitted to Batman District State Hospital. Emergency Service at two different time periods, one between 28 March 2019 and 28 April 2019 (prior to the Covid-19 pandemic) and the other between 28 March 2020 and 28 April 2020 (during the Covid-19 pandemic) has been studie. The results were compared between the two periods designated as the pandemic period and the pre-pandemic period. The authors concluded that measures taken to prevent the spread of Covid-19 infection have caused a very significant drop in emergency service admissions in the range of 38 to 46 percent reduction of non-covid cases. Study limited to Turkey.

Thamer A et al (2020) Impact of COVID-19 pandemic on patient satisfaction and surgical outcomes: A retrospective and cross sectional study. Annals of Medicine and Surgery. This retrospective cross-sectional study was done to evaluate the impact of the COVID-19 pandemic on patient satisfaction and surgical outcomes at King Khalid University Hospital in Saudi Arabia between Mar2020 to Apr 2020. The authors studied 331 participants with patient satisfaction and surgical outcomes being the main outcome measures. Regarding patient satisfaction, 77.6% and 93% of the patients reported that nurses and doctors, respectively, treated them with courtesy and respect, listened to them carefully, and provided clear explanations to them. 90.3% were satisfied with the hospital sanitary measures. 64.1% stated that they got written instructions at the time of discharge. The overall results were satisfactory. Study was limited to the surgical clientele.

R. Gerbutavicius at al (2021). Evaluation of patient satisfaction with an ophthalmology video consultation during the COVID-19 pandemic. Ophthalmologe 2021 Supplement. Patient satisfaction survey studied in the environs of an ophthalmology department during covid pandemic to assess attitudes and satisfaction levels. A sample of 29 patients studied with a satisfaction acceptance level of 69% contrary to expectations of difficulty with video conferencing in these departments. The study was solely limited to the video consultation experience in a high risk of contact department like that of ophthalmology (eye). The study does not include a comprehensive survey of all patient experience during times of pandemic.

Suryavanshi N et al (Aug 2020). Mental health and quality of life among healthcare professionals during the COVID-19 pandemic in India. Brain and Behavior (Open Access).

Using snowball sampling, the authors conducted an online survey starting from May 2020 among health care professionals from state of Maharashtra. Data was collected on demographics, depression, and anxiety using validated tools, quality of life, and perceived stressors. Multivariable logistic regression and principal component analysis were performed to assess risk factors associated with mental health symptoms. Of 197 health care workers assessed, 157 (80%) were from Maharashtra, 130 (66%) from public hospitals, 47 (24%) nurses, 66 (34%) physicians, 101 (52%) females, and 81 (41%) ≤30 years. Eighty-seven percent provided direct COVID-19 care with 43% caring for >10 patients/day. A large proportion reported symptoms of depression (92, 47%), anxiety (98, 50%), and low QoL (89, 45%). Odds of combined depression and anxiety were 2.37 times higher among single health care professionals compared to married (95% CI:1.03–4.96). Work environment stressors were associated with 46% increased risk of combined depression and anxiety (95% CI: 1.15–1.85). Moderate to severe depression and anxiety were independently associated with increased risk of low QoL [OR: 3.19 (95% CI: 1.30–7.84), OR: 2.84 (95% CI: 1.29–6.29)].The authors concluded that there was a high prevalence of symptoms of depression and anxiety and low QoL among Indian healthcare professionals during the COVID-19 pandemic. They opined that there is an urgent need to prevent and treat mental health symptoms among frontline health care professionals. The sample size was adequate and the study was done from an area with high incidence of COVID. However the study addressed only mental health and stressors predominantly.

Fuqiang Z, Ahmad F and Ahmad Faraz N (July 2020). Caring for the caregiver during COVID-19 outbreak: Does inclusive leadership improve psychological safety and curb psychological distress?--A cross-sectional study. Int J of Nursing Studies. The researchers recruited 451 on-duty registered nurses from five hospitals providing

patient care during the highly infectious phase of COVID-19 in January 2020 in Wuhan city which was the epicenter of the outbreak in China. Data was collected through an online questionnaire survey in three stages with temporal separation to avoid common method bias. The study controlled for effects of age, gender, experience, working hours and education. The authors concluded overall that to establish a psychologically safe environment for the healthcare workers, leaders should primarily focus on fear and safety concerns during an epidemic. For nursing leadership, the results of the study prove that an inclusive leadership style can be effective in the implementation of mental health support initiatives as a built-in mechanism for nurses. Training programs on inclusive leadership and incentives should be introduced for nurses in informal managing roles to inculcate a culture of openness, availability and accessibility. Limitation: Study of healthcare workers confined to nurses only.

Mistry L (Feb 2021). India's healthcare sector transformation in the post COVID-19 era. Mantra-Perspectives from KPMG in India. The authors have concluded that India's private healthcare sector has contributed significantly and accounts for about 60 per cent of inpatient care. Additionally, hospitals and labs witnessed a sharp decline in revenue due to delayed medical tourism and elective processes and the pandemic is speculated to trim the private hospitals' operational profit by approximately 40 per cent this fiscal year. The author quotes Business Standard news of 28 Jan 2021 for these figures.

Verhoeven V et al (June 2020). Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs. *BMJ Open* This study was from the University of Antwerp, Belgium. This study looked at the consequences of the COVID-19 outbreak on the core competencies of general practice, as they were experienced by general

practitioners (GPs) on the frontline and found that changes in practice management and in consultation strategies were quickly adopted. GPs thought that they are at high risk of getting infected and were stressed on that account. Dropping out and being unable to contribute their part or becoming virus transmitters are reported to be greater concerns than getting ill themselves. The study was conducted by direct interview of these GPs with a sample size of 132. Study was too early in the epidemic with lesser adaptation chances and time for governments as well as healthcare professionals.

Melvin C. C. Lee et al (2020). Psychological distress during the COVID-19 pandemic amongst anaesthesiologists and nurses. British Journal of Anaesthesia. This observational, cross-sectional study was conducted at a 1240-bed tertiary academic medical centre in Singapore. During this pandemic, doctors and other healthcare workers were invited to participate with a one-time self-administered online questionnaire Key mental health outcomes were measured using two validated self-reporting instruments for identifying psychological distress: the 12-item General Health Questionnaire (GHQ-12) and Hospital Anxiety and Depression Scale (HADS). Their results found a high prevalence of anxiety and screening of at-risk individuals and adoption of early psychological support interventions for affected staff was advised.

Abdulah DM and Saeed MS (July 2021). The response of medical doctors and hospital administration to infection prevention and control in the health care of suspected/confirmed covid-19 patients. Infect Dis Clin Pract The study looked at response of doctors involved in treating COVID cases from multiple issues. However one of the findings of the study was that the health system cannot ask healthcare workers to be on the frontline without suitable protective equipment. When doctors work on the respiratory ward with COVID-19 patients, they feel unprotected without sufficient PPE, as reflected in their comments. In addition, these doctors feared that they can carry the

disease home to their families or pass it to other non–COVID patients in their care. This was one of the major findings of their study.

Lee A et al (July 2020). Managing Anxiety in Anesthesiology and Intensive Care Providers during the Covid-19 Pandemic: An Analysis of the Psychosocial Response of a Front-Line Department NEJM Catalyst The authors studied the factors most related to front-line providers' anxiety, and thereby developed effective responses, by surveying the clinical members of the frontline department to better understand the effect of providing care during the pandemic on their self-reported levels of anxiety. The authors provide a number of suggestions for reducing the anxiety felt during this anxiety-inducing crisis, as well as promoting the emotional wellbeing and effectiveness of front-line providers in addressing the Covid-19 pandemic.

Singh K et al (April 2021) Health, psychosocial, and economic impacts of the COVID-19 pandemic on people with chronic conditions in India: a mixed methods study. BMC Public Health

People with chronic conditions are disproportionately prone to be affected by the COVID-19 pandemic but there are limited data documenting this. The authors have studied the health, psychosocial and economic impacts of the COVID-19 pandemic on people with chronic conditions in India. Between July 29, to September 12, 2020, they telephonically surveyed adults ($n = 2335$) with chronic conditions across four sites in India. Data on participants' demographic, socio-economic status, co-morbidities, access to health care, treatment satisfaction, self-care behaviors, employment, and income were collected using pre-tested questionnaires. The authors performed multivariable logistic regression analysis to examine the factors associated with difficulty in accessing medicines and worsening of diabetes or hypertension symptoms. Further, a diverse sample of 40 participants

completed qualitative interviews that focused on eliciting patient's experiences during the COVID-19 lockdowns and data analyzed using thematic analysis. Thus the study had mixed research strategy. One thousand seven hundred thirty-four individuals completed the survey (response rate = 74%). The mean (SD) age of respondents was 57.8 years (11.3) and 50% were men. During the COVID-19 lockdowns in India, 83% of participants reported difficulty in accessing healthcare, 17% faced difficulties in accessing medicines, 59% reported loss of income, 38% lost jobs, and 28% reduced fruit and vegetable consumption. In the final-adjusted regression model, rural residence (OR, 95%CI: 4.01,2.90–5.53), having diabetes (2.42, 1.81–3.25) and hypertension (1.70,1.27–2.27), and loss of income (2.30,1.62–3.26) were significantly associated with difficulty in accessing medicines. Further, difficulties in accessing medicines (3.67,2.52–5.35), and job loss (1.90,1.25–2.89) were associated with worsening of diabetes or hypertension symptoms. Qualitative data suggest most participants experienced psychosocial distress due to loss of job or income and had difficulties in accessing in-patient services. The authors concluded that people with chronic conditions, particularly among poor, rural, and marginalized populations, have experienced difficulties in accessing healthcare and been severely affected both socially and financially by the COVID-19 pandemic.

Parthasarathy R et al (April 2021). Mental health issues among health care workers during the COVID-19 pandemic–a study from India. Asian Journal of Psychiatry

Mental health issues among health care workers (HCWs) in treatment settings during COVID-19 remains understudied in India. This study examined its prevalence and correlates among HCWs in Karnataka State, India. HCWs who attended a workshop to improve mental health well-being during COVID-19 completed an anonymous online questionnaire. In addition to socio-demographics, domains assessed include occupational characteristics, COVID-19 related concerns, anxiety/depression, substance use, suicidal

tendencies, lifestyle and family functioning. Of the 3083 HCWs who completed the survey (response rate-51.4 %), anxiety disorder and depression was highest among those with frontline COVID-19 responsibilities (anxiety disorder-26.6 %, depression-23.8 %). Prevalence was significantly higher among those with clinical responsibilities compared to those with supportive responsibilities (anxiety disorder: 23.9 % vs 15.5 %), (depression: 20.0 % vs. 14.2 %). In the backward step-wise logistic regression analysis, HCWs with anxiety disorder were more likely to be doctors/nurses/hospital assistants, older, female, unmarried, without a leisure activity, report increased alcohol use and suicidal thoughts after pandemic onset, and having a history of receiving mental health interventions. Participants with depression additionally had family distress and hardly ever exercised. The authors concluded that mental health issues are common among HCWs in India. Interventions need to ensure that HCWs are protected from mental health consequences of working in COVID-19 treatment settings. The study has contributed to one prominent aspect of the COVID-19 pandemic on health care workers.

Mitchinson L et al (2021). Missing the human connection: A rapid appraisal of healthcare workers' perceptions and experiences of providing palliative care during the COVID-19 pandemic. Palliative Medicine In emergency medical situations the delivery of traditional care can be disrupted by work pressures and infection prevention measures. With the death toll rising worldwide, the authors have contended that we do not know what impact the COVID-19 outbreak is having on the delivery of end-of-life care. The healthcare workers struggled to connect with patients due to increased work pressures and limited opportunities for human interaction. The paper brings out an understanding of how changes to end-of-life care impact healthcare workers and how they respond by attempting to reintroduce human connection and compassion at the end-of-life. These

factors also add to the stress on the health care worker foraging into new zones and modalities of treatment and care.

Aashima, Nanda M & Sharma, R. (2021). A review of patient satisfaction and experience with telemedicine: a virtual solution during and beyond COVID-19 pandemic. Telemedicine and e-Health 2021

This article reviews the studies examining patients' perspective toward telemedicine and their preference for virtual health care services. The findings based upon 48,144 surveyed patients and 146 providers in 12 different countries revealed high satisfaction with virtual encounters across a spectrum of diseases. Telemedicine was found satisfactory on various outcome measures, such as addressing patients' concerns, communication with health care providers, usefulness, and reliability. Most common advantages were time saved due to lesser traveling and waiting time, better accessibility, convenience, and cost efficiency. Age and sex did not significantly impact the satisfaction levels. Physicians and patients both showed a strong preference for continued usage and agreed upon telemedicine's potential to complement the regular health care services even after the pandemic. Technical challenges (reported in 10 studies) and lack of physical examination (reported in 13 studies) were the main limitations encountered in virtual visits. The authors have stated that long-term sustainability of telemedicine for all socioeconomic classes requires closer scrutiny of issues such as technology, training, reimbursement, data privacy, legal guidelines, and framework. Telemedicine must be adopted as a proactive strategy and has immense potential in complementing conventional health care services, such as diagnosis, treatment, follow-up, surveillance, and infection control. Telemedicine was yet another aspect of patient care that reached due to the pandemic and with initial roadblocks encountered the method has largely been adopted with some disadvantages. Telemedicine

was an attempt to bridge the gap with the non-covid elective clientele who found it restrictive and difficult to reach a health care establishment.

World Health Organization Publication Interim report. (Aug 2020). ***Pulse survey on continuity of essential health services during the COVID-19 pandemic: interim report, 27 August 2020*** **.World Health Organization publication**

WHO conducted a key informant survey among ministry of health officials in five WHO regions between May and July 2020 to assess the impact of the COVID-19 pandemic on up to 25 essential health services in countries. Questionnaires were sent to 159 countries and 105 responses were received (66% response rate). 80%of the 105 responding countries had established packages of essential health services prior to the pandemic and 66% of these countries had already identified a core set of services to be maintained during the COVID-19 pandemic. In general, disruptions of essential health services were reported by nearly all countries, and more so in lower-income than higher-income countries. The great majority of service disruptions were partial, which was defined as a change of 5–50% in service provision or use. Severe/complete disruptions were defined as a change of more than 50% in service provision or use. All services were affected, including essential services for communicable diseases, non-communicable diseases, mental health, reproductive, maternal, newborn, child and adolescent health, and nutrition services. Emergency services were the least disrupted, although 16 countries reported disruptions across all emergency services. The most severely affected service delivery platforms were mobile services, often suspended by government, and campaigns, for example as used for malaria prevention or immunization. The causes of the disruptions were a mix of demand and supply factors. On the demand side, 76% of countries reported reductions in outpatient care attendance. Other factors, such as lockdowns hindering access and financial difficulties during lockdown were also mentioned. On the supply

side, the most commonly reported factor was cancellation of elective services (66%). Other factors mentioned included staff redeployment to provide COVID-19 relief, unavailability of services owing to closures of health facilities or health services, and supply-chain difficulties. Countries have responded to the adverse effects on essential health services in multiple ways, most commonly through triage of health services, telemedicine deployment to replace in-person consultations (more common in high-income countries), and changes in dispensing approaches for medicines. Eighty countries indicated priorities and technical assistance needs, including guidance and support in adapting strategies to maintain essential health services, assuring essential supplies, strengthening the health workforce, implementing adequate infection prevention and control capacities, risk communication, monitoring and telemedicine.

Singh DR et al (2021). Impact of COVID-19 on health services utilization in Province-2 of Nepal: a qualitative study among community members and stakeholders. BMC Health Serv Res 21.

The COVID-19 pandemic has posed unprecedented challenges and threats to the health care system, particularly affecting the effective delivery of essential health services in resource-poor countries such as Nepal. This study has explored community perceptions of COVID-19 and their experiences towards health services utilization during the pandemic in Province-2 of Nepal.

Semi-structured qualitative interviews were conducted among purposively selected participants ($n = 41$) from a mix of rural and urban settings in all districts ($n = 8$) of the Province 2 of Nepal. Virtual interviews were conducted between July and August 2020 in local languages.

The findings of this research are categorized into four global themes: i) Community and stakeholders' perceptions towards COVID-19; ii) Impact of COVID-19 and lockdown on health services delivery; iii) Community perceptions and experiences of health services during COVID-19; and iv) COVID-19: testing, isolation, and quarantine services. Most participants shared their experience of being worried and anxious about COVID-19 and reported a lack of awareness, misinformation, and stigma as major factors contributing to the spread of COVID-19. Maternity services, immunization, and supply of essential medicine were found to be the most affected areas of health care delivery during the lockdown. Participants reported that the interruptions in health services were mostly due to the closure of health services at local health care facilities, limited affordability, and involvement of private health sectors during the pandemic, fears of COVID-19 transmission among health care workers and within health centers, and disruption of transportation services. In addition, the participants expressed frustrations on poor testing, isolation, and quarantine services related to COVID-19, and poor accountability from the government at all levels towards health services continuation/management during the COVID-19 pandemic.

Research Gap

The following research gaps were found at the time of starting this dissertation in the second half of 2021 as well as during the course of the data gathering.

1. Very few Indian studies have addressed the stressors faced by the average health care worker and all have limited themselves to mental stress and adaption of the health care worker. The only study that has addressed these issues to some extent (Sengupta M et al 2021) has limited the study to very small sample size of 20 using a qualitative methodology. Most other studies are focussed on mental issues. Indian data for stress /

anxiety among frontline COVID-19 health care workers is feeble. Also these studies do not involve all stake holders and healthcare workers at all levels.

2. We also found a lack of data regarding the missing non-covid clientele during the pandemic period with no definite numbers available for a hospital with multiple specialties. Most studies have focussed on cardiac and oncology patient discontinuity of services without taking into consideration the larger fraction of multispecialty clientele coming to general hospitals.

3. There are hardly any Indian studies that have looked at patient satisfaction feedbacks at the present stage after the second wave of pandemic and post start of vaccination. Most have looked at telemedicine utility satisfaction and do not give a picture of the current state of medical delivery system as perceived by the patient-clientele. Moreover these have been qualitative studies with limited number of patients or healthcare workers. This study has looked at the aforementioned aspects in a quantitative manner.

Chapter IV

CHALLENGES FACED BY HEALTHCARE WORKERS DURING THE PANDEMIC

Healthcare workers faced multiple challenges in the form of stressors related to their workplace, societal and domestic including financial issues during the past almost two years. However most studies have considered the issues of mental health alone and have focused on patient concerns and fear of the pandemic. There exists a need to highlight aforementioned added factors such as societal pressures and attitudes, resource constraints at workplace and other domestic stressors too by addressing a larger group of healthcare workers.

Even before the pandemic years, health care workers routinely face challenges and risks to their health during the normal course of their work when dealing closely with infected patients, working in an infected environment, emotional challenges dealing with patients' adverse outcome irrespective of the cause and numerous such other risks. These risks are not just limited to the doctor alone but often get carried into the household. However the pandemic strained the existing health information, training and knowledge base to an entirely different extent. Not only were the health workers stressed by facing the disease directly but also in terms of coping skills for patient attrition, societal pressures and attitudes, resource constraints at workplace and other domestic stressors. Most studies have documented only the *mental state* of the health worker faced with the situation and have not focused on aforementioned factors. This study has looked at the different types of challenges faced by the health care workers till the second wave of COVID-19 pandemic and not merely limited to mental health issues among healthcare workers alone.

The COVID-19 pandemic has overwhelmed mankind since its onset in Nov 2019, crippling economies and healthcare facilities worldwide, leaving no nation, race or gender untouched. It has not only outstretched the medical services but has had an undeniable psychological affect on the society, reverberations of which are yet to be discerned by the populace. The short-term psychological effects have insidiously affected every healthcare worker seeing the scale of this human tragedy. In the long term, mental health care services have a very crucial role to play, both in mitigating the onslaught of psychiatric morbidity and also in shaping the response towards infection - while safeguarding and fostering human connection and contact.

The healthcare workers always have a critical role to play in providing essential mental health care and psycho-social support to those affected more so during crisis such as the ongoing pandemic. The healthcare workers being the frontline workers during covid have had the maximum risk of exposure to the virus and its unintended consequences. They play a vital role in planning the needs of safety of healthcare staff by organizing decontamination procedures, furthering education and continuing feedback from the co-workers. In addition the healthcare workers have an unenviable and crucial role to play in the dissemination of health and disease related information, model an empathetic approach and above all to do this while preserving the motto of service with a smile even in times of workplace societal or domestic and personal stressors!

It is well known now that the corona virus can affect the central nervous system though not causing direct behavioural changes. However, the knowledge of spread of the outbreak led to development of anxiety amongst the healthcare workers especially in the first year of the pandemic which in turn affects their mental health status and their ability to work in a hazardous environment. The healthcare personnel were taking severe blows on their individual lives, family, relationships and mental health. Different societal

attributes such as avoidance, home confinement, stress, work-life balance and increased expenses were experienced by the healthcare workers (Sengupta and Roy 2021).

Emotional needs of HCWs must not be ignored: health care workers at the front-line of COVID-19 are under extreme physical and mental stress. They are physically overworked beyond conceivable limits; they are forced to make tormenting triage decisions, and are racked by guilt and pain from losing patients and colleagues. This is in addition to worrying about their own health and the constant anxiety of passing infection on to their families and friends. A study conducted by Chinese doctors and published in the Lancet showed that 70% of health workers on the frontline in Hubei, suffered from extreme levels of stress, 50% had depressive orders, 44% had anxiety and 34% insomnia. (Guo et al 2021)

The significance of psychosocial skills for COVID- 19 responders was highlighted by WHO on 01 Jun 2020. WHO emphasised on taking care of one's own mental health, demonstrating empathy and helping people suffering from stress or severe distress. Basic psychosocial skills, a guide for essential healthcare workers was introduced during their training programme and a dedicated counselling helpline with psychiatrist and psychological counsellor was activated to function round the clock in the hospital.

Accurate knowledge presently regarding the COVID-19 is often associated with less anxiety amongst the individuals. Hence, more importance needs to be given to providing correct updated data and revising protocols as more knowledge of the pandemic surfaced over time.

The Indian healthcare sector provides a contrasting landscape in the spectrum of healthcare activities. On the one side, there are well-built glass and chrome structures that are state of the art with advanced medical aid that is always ready to welcome and provide

service to the patients, though only a thin section of the population can afford it. On the other side, there are public health centres with average infrastructure, which still serve patients and attempt to identify as a healthcare facility though desperately looks forward to a face lift and transformation.

The Indian healthcare system is categorised into two main types based on the mode of deliverance (Kumar & Prakash, 2011). Public healthcare covers about 18% of total OPD1 and approximately 44% of total IPD2 (Thayyil & Jeeja, 2013). It is subsidised and largely free for those below the poverty line. The private healthcare has strengthened its foundation in the last two decades acting as healthcare provider for the 70% households located in urban India and 63% in rural India (International Institute for Population Sciences, 2007). It consists of approximately 58% hospitals in the country with 29% beds covering different hospital types with 81% on-roll doctors (NHM task report). The various causes of differentiation in these two systems are ascribed to poor quality of care in public health, long waiting time, timing issues and long queues for subsidised or free diagnostic/surgical procedures (Bajpai 2014). It is one of the leading reasons for burgeoning of various private healthcare facilities. (Sengupta et al 2021).

Though our study was conducted among healthcare workers in government setup hospitals only, we understand that the types and extent of stressors will vary with the type of healthcare organisation workplace.

In addition to the mental health aspect of the HCW, our questionnaire has tried to address the following aspects of likely workplace, domestic and societal pressures including health aspects of the worker as depicted in table below. The question numbers corresponding to the HCW questionnaire is also shown against each construct parameter below in Table 4.1.

Table 4.1: Grouping of questions as constructs for HCW questionnaire

Sl No	Constructs	Questions No
C-1	Fear of disease or transmission	1
C-2	Social or community relationships and adaptiveness	2,3,18
C-3	Essential services availability	4,14
C-4	Resource availability, adequacy and allotment	5,6,7
C-5	Changing guidelines	10
C-6	Administrative support, training	8,9,12,17
C-7	Biomedical waste	13
C-8	Physical/mental fitness	11,15,16

Broadly these fall under workplace stressors, societal and domestic stressors, health factors and other personal issues in the absence of pre-existing psychological illnesses.

The findings of the responses received for HCW questionnaire from 159 respondents are discussed in the following pages.

HCW Questionnaire responses (Total No of participants = 159)

Demographic Information

(a) Age Distribution

Age group in yrs	n-159	%
Less than 30	27	16.98%
31 to 40	**77**	**48.43%**
41 to 50	**35**	**22.01%**
51 to 60	18	11.32%
> 60	2	1.26%

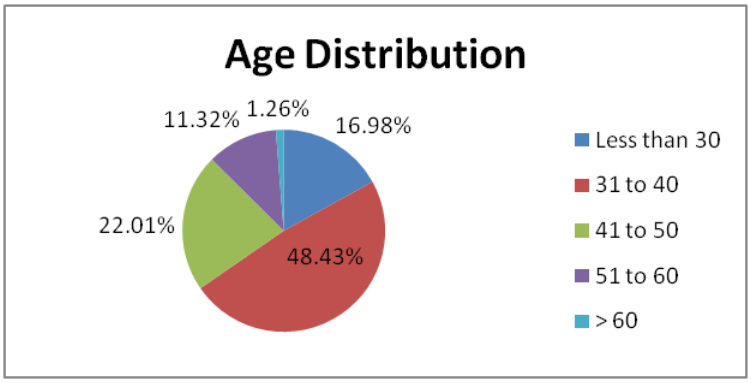


Figure 4.1: Age distribution in percentage

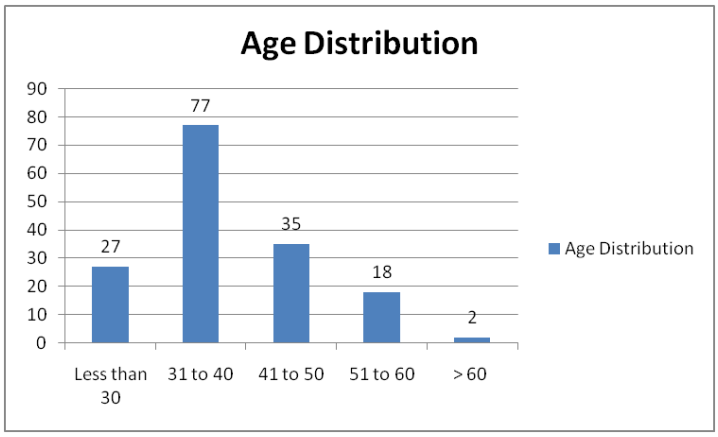


Fig 4.2: Age distribution in numbers

Majority of the respondents were between the 31 to 50 years of age accounting for 70 % of the total number of 159. The age group is keeping with the military doctors' age group profile.

(b) Gender Distribution

Gender	n-159	%
Male	117	73.58
Female	41	25.79
Undisclosed	1	0.63

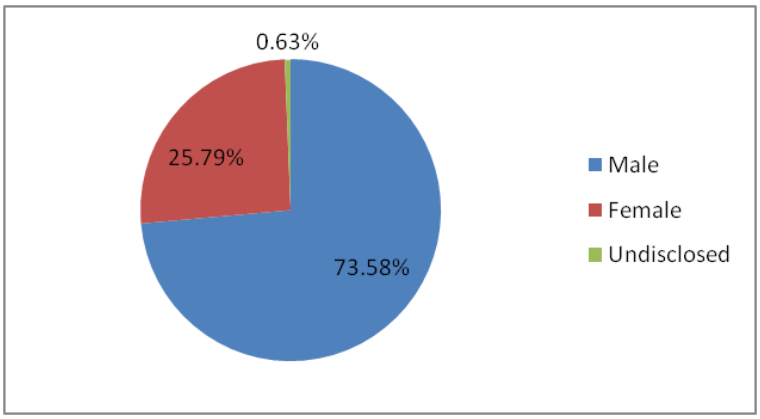


Fig 4.3: Gender distribution percentage

Out of the total of 159 healthcare workers who responded to the questionnaire, 117 (73.58%) were males and 41 (25.79%) were females. One participant answered with the option 'prefer not to say' and has been kept under undisclosed group.

This corresponds to the large number of male HCW in the military set up as doctors or specialists and administrators and the military nursing service occupied entirely with women workforce.

(c) Job Profile Healthcare worker during the pandemic

Healthcare workers play different roles during different assignments and hence the questionnaire asked for the role played during the pandemic. For example a specialist doing administrative work alone during the pandemic would address himself as an administrator or supervisor.

Status	n-159	%
Nursing staff	31	19.50
MBBS or PG Resident	21	13.21
Specialist PG Qualified	66	41.51
Super specialist Post MD	31	19.50
Health Admin /Supervisor	10	6.29

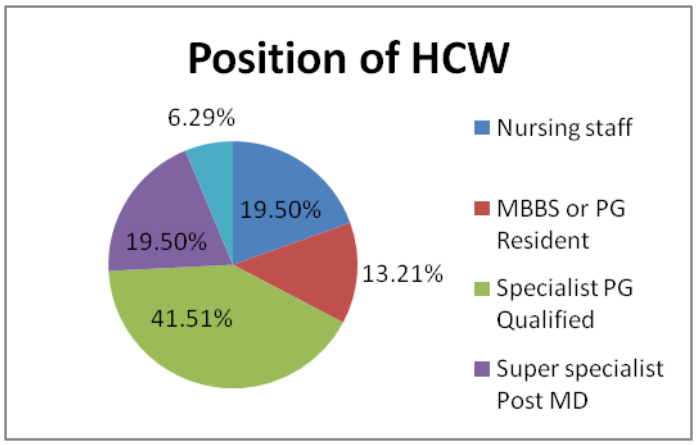


Fig 4.4: Status of HCW in percentage

The largest groups of health care workers among the respondents were specialists with PG qualification who were 66 in number (41.51%) followed by equal number of superspecialists and nursing staff at 31 each (19.50%). PG residents and MBBS doctors were 21 (13.21%) in number and health administrators were only 10 (5.29%) in number being a smaller cadre. The clustered column below depicts the numbers in each group separately and in proportion.

(d) Experience of the HCW

The work experience of the health care worker in terms of the service he has put in after basic qualification is an important factor in how he/she handles a stressful situation and the extent to which they are affected it.

Experience in yrs	n-159	%
< 10 yrs	56	35.22%
10 to 20 yrs	65	40.88%
> 20 to 30 yrs	31	19.50%
>30 yrs	7	4.40%

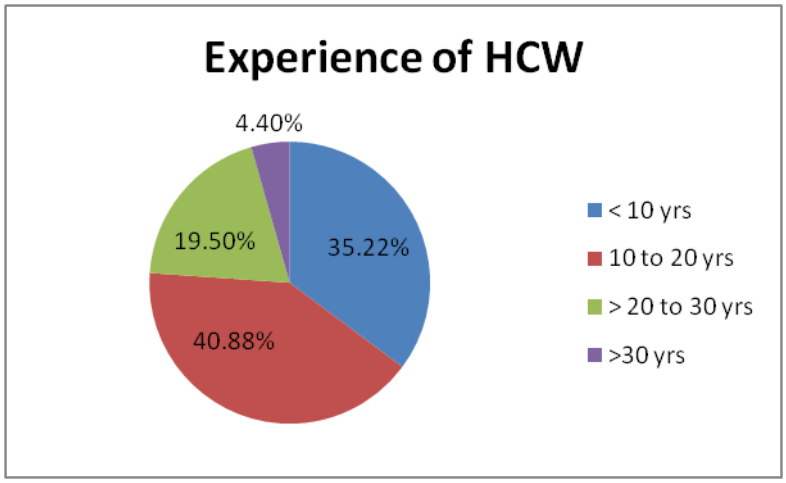


Fig 4.5: Experience of HCW in percentage

Out of the total of 159 respondents the largest group of 65 (40.88%) had a service work experience between 10 to 20 years. The next largest proportion was the less than 10 years experience amounting to 56 (35.22%) in number. The more than 20 years to 30 years were 31 (19.50%) in number and those with more than 30 years service were 7 (4.40%) in number. The large majority of health care workers deployed initially were the younger workers.

(e) Preexisting Health Issues in the HCW

	n-159	%
Health Issues Present	20	12.58%
No health issues	131	82.39%
Maybe present	4	2.52%
Undisclosed	4	2.52%

Presence or absence of health issue is an important factor from the view of his/her ability to handle workplace as well as domestic stressors.

Out of the total of 159 respondents the large majority of 131 (82.39%) had no self-declared health issues and 20 (12.58%) replied in the affirmative and 4 each were in the group of uncertain and undisclosed.

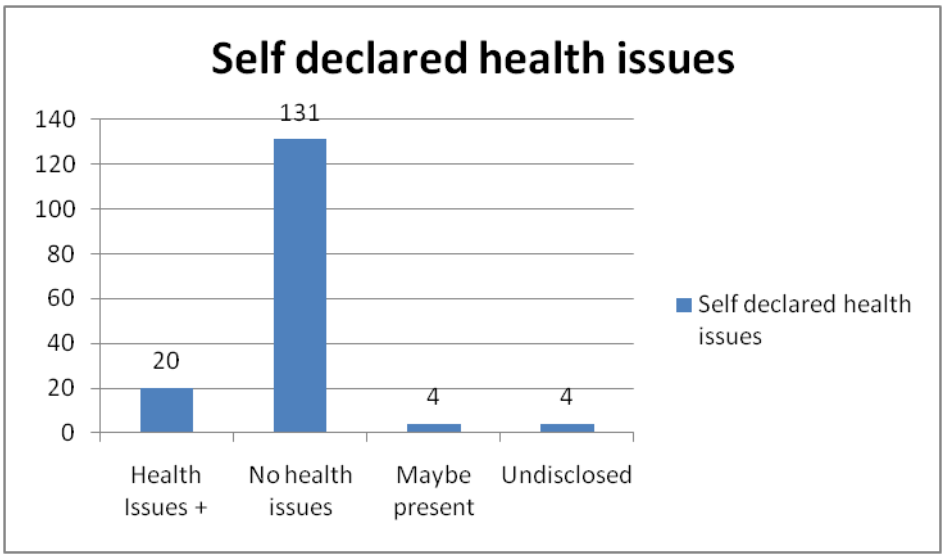


Fig 4.6: health issues among HCW in percentage

After the above demographic, experience and health profile the responses to questions were as follows:

<u>Construct -1: Fear of infection or transmission</u>

Q No 1: I was fearful of catching an unintended infection from workplace

	n-159	%
Strongly Agree	**25**	**15.72**
Agree	**73**	**45.91**
Neutral	36	22.64
Disagree	19	11.95
Strongly Disagree	6	3.77

This question pertains to the fear factor of the pandemic as a cause of stress to the HCW. Out of the 159 responses, 25 (15.72%) have strongly agreed to the question and a further 73 (45.91%) have agreed to this while 36 (22.64%) are neutral responders. Only six 9 3.77%) have strongly disagreed with the fear factor and 19 (11.95%) have disagreed to this. Thus the majority of 98 (61.63%) have agreed to the fear factor and a smaller section of 25 (15.72%) HCWs have disagreed with the fear factor. It is to be noted that the percentage of neutral responders at 36 is 22.64%-- more than a fifth of the group!

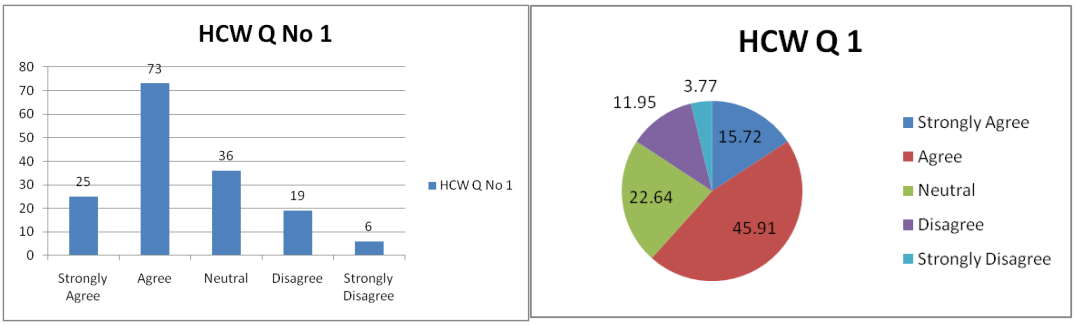


Fig 4.7: Responses to HCW Q No1 in numbers and percentage

<u>Construct-2 : Social or community relationships and adaptiveness</u>

Q No 2: I felt alienated from my immediate family due to my work schedule and working in covid wards

	n-159	%
Strongly Agree	**36**	**22.64**
Agree	**56**	**35.22**
Neutral	30	18.87
Disagree	30	18.87
Strongly Disagree	7	4.40

This question pertains to the societal issues and adaptability factors as stressors. The response tilts in favour of societal issues as 36 (22.64%) have strongly agreed and a further 56 (35.22%) have agreed to this thus taking the total number to 92 (57.86%). Since 30 (18.87%) are neutral, the number of HCWs disagreeing with the issue are limited to 37 (23.27%) only.

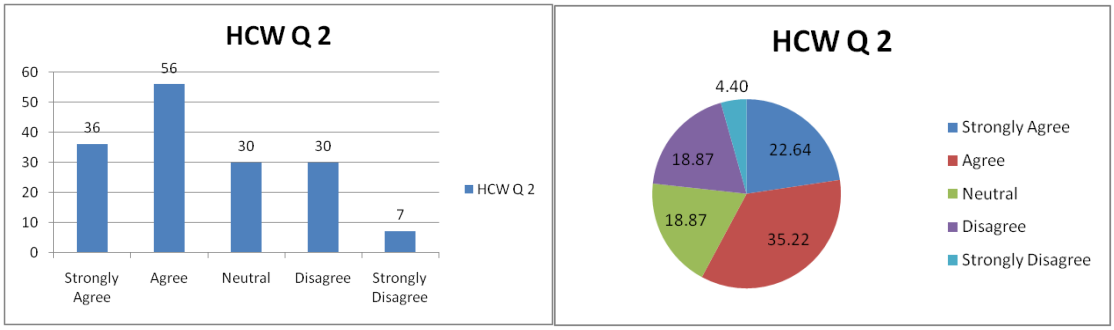


Fig 4.8: Responses to HCW Q No 2 in numbers and percentage

Q No 3: My social interactions with my friends and relatives changed negatively due to the pandemic

Strongly Agree	**31**	**19.50%**
Agree	**60**	**37.74%**
Neutral	19	11.95%
Disagree	41	25.79%
Strongly Disagree	8	5.03%

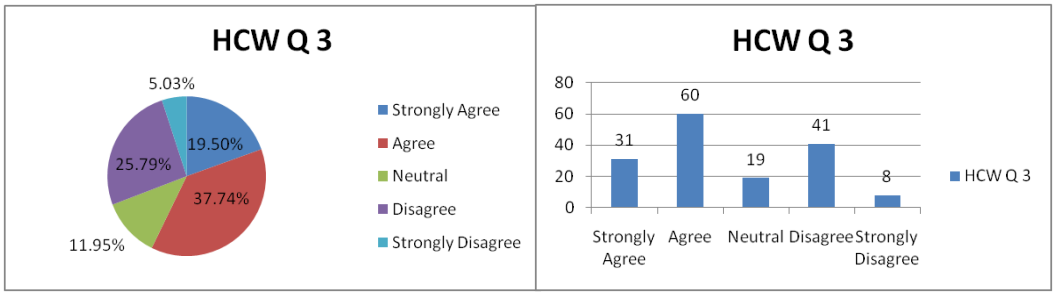


Fig 4.9: Responses to HCW Q No3 in numbers and percentage

Like the previous question, this question too pertains to the societal issues and adaptability factors as likely stressors for the HCW. The response here has been a total of 91 (57.24%) strongly agreeing or agreeing to this question with 19 (11.95%) staying neutral and 49 (28.82%) not agreeing to the question.

Q No 18: I feel that the society in general was indifferent and unsupportive of the health care workers during the pandemic.

	n-159	%
Strongly Agree	38	23.9
Agree	58	36.5
Neutral	31	19.5
Disagree	31	19.5
Strongly Disagree	1	0.6

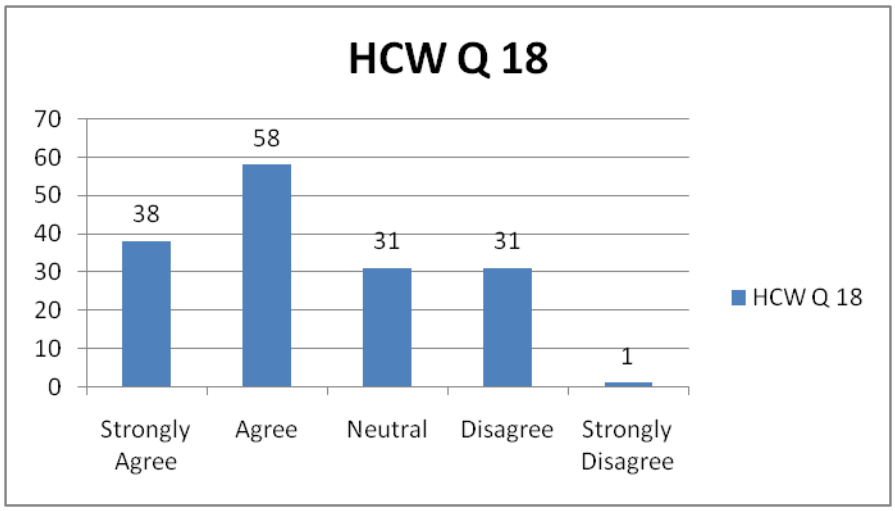


Fig 4.10: Responses to HCW Q 18

The pandemic was perceived as a testing time for the healthcare workers too in terms of social isolation and indifferent attitude of the populace and this question enquires regarding that. More than half the respondents 96 (60.34%) have felt indifference and lack

of support to some extent and have agreed to the statement. A total of 32 (20.1%) have disagreed in some way and 31 (19.5%) have remained neutral.

Construct-3: Essential Services Availability

Q No 4: I found it difficult to meet the essential household supplies for my family during the pandemic

	n- 159	%
Strongly Agree	21	13.21%
Agree	51	32.08%
Neutral	39	24.53%
Disagree	42	26.42%
Strongly Disagree	6	3.77%

This question tries to record the degree to which supply of essential commodities to households affected stress among HCW. It is well known that during periods of lockdown, access to supplies became strained. Out of the 159 responses, 72 (45.29%) have agreed to this in some form and 48 (30.19%) have disagreed. Almost a quarter of the group 39 (24.53%) have remained neutral. The results indicate a divided verdict though marginally larger groups seem to have identified this as a stress factor during lockdown.

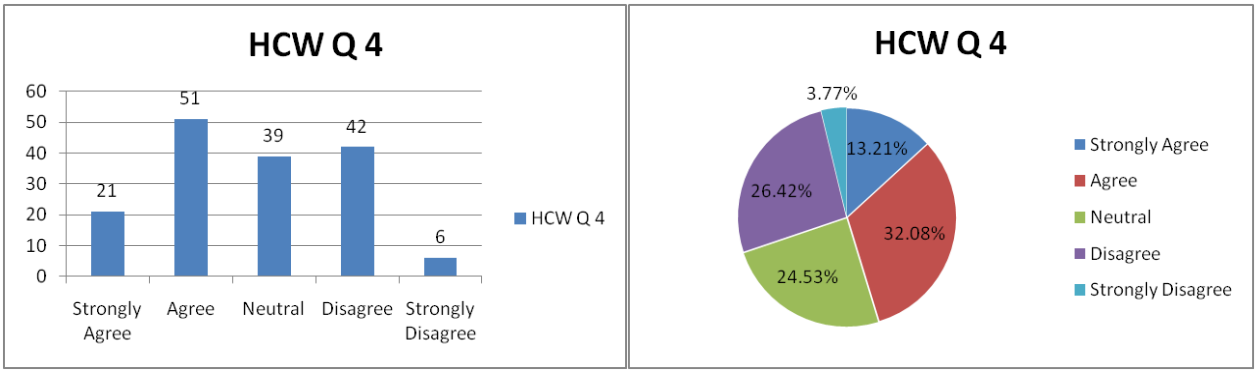


Fig 4.11: Responses to HCW Q No 4 in numbers and percentage

Q No 14: I faced a certain degree of financial stress and uncertainty during the pandemic

	n- 159	%
Strongly Agree	8	5.03
Agree	27	16.98
Neutral	33	20.75
Disagree	73	45.91
Strongly Disagree	18	11.32

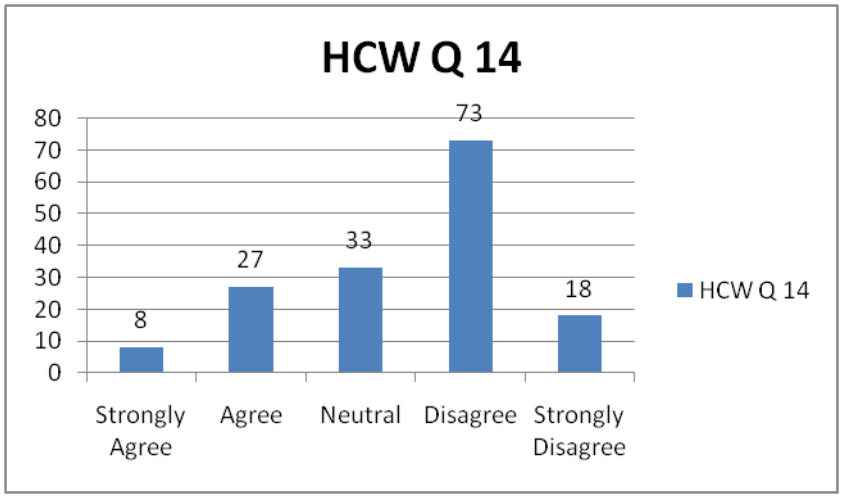


Fig 4.12: Responses to HCW Q 14

Financial stress has been mentioned as a source of stress during the pandemic. However in this study since most of the health care workers were regular government employees more than half of the responses 91(57.23%) have disagreed with this question in some way. Almost 20.75% have maintained neutral status and only around 12% have agreed to have financial stresses to any degree.

<u>Construct-4: Resource availability, adequacy and allotment</u>

Q No 5: I felt that the availability of PPEs, face masks and sanitizers was a source of stress for me in my work setting

	n-159	%
Strongly Agree	24	15.09
Agree	47	29.56
Neutral	22	13.84
Disagree	59	37.11
Strongly Disagree	7	4.40

This question pertains to the resource availability, adequacy and allotment factors as a reason for workplace stress. While 71 (44.65%) have agreed with this to some extent, 66 (41.51%) have disagreed with the view in some way. Around 13.84% at 22 respondents have maintained a neutral view. Responses in Fig 11 and 12 below

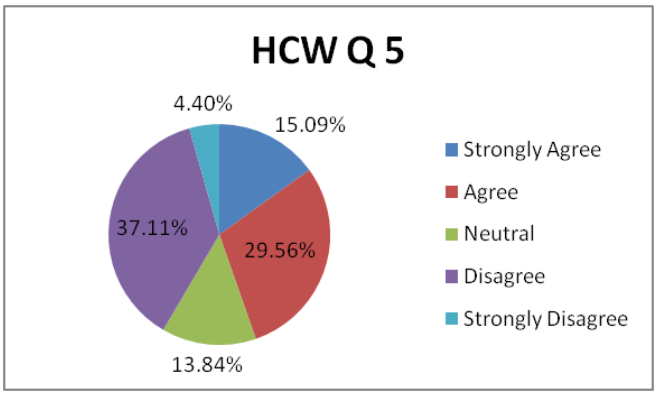


Fig 4.13: Responses to HCW Q 5 in percentage

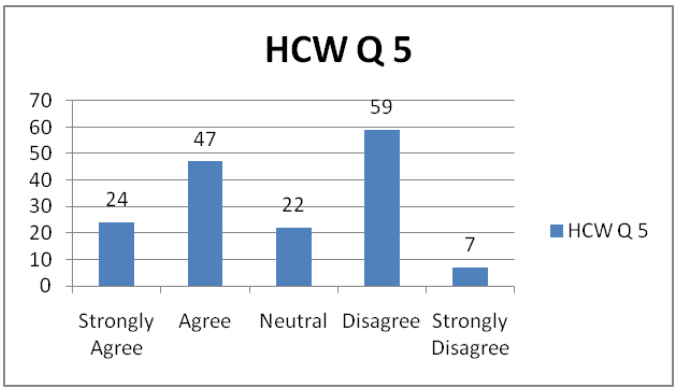


Fig 4.14: Responses to HCW Q 5 in numbers

Q No 6: I felt that the distribution of medicines for treating covid cases in my work setting was a source of stress for me

	n-159	%
Strongly Agree	12	7.55
Agree	51	32.08
Neutral	31	19.50
Disagree	53	33.33
Strongly Disagree	12	7.55

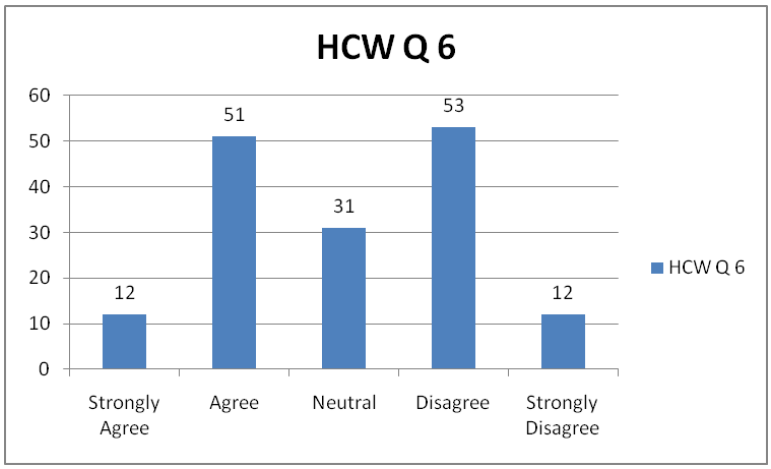


Fig 4.15: Responses to HCW Q No 6

This question also pertains to the evaluation of resource availability, adequacy and allotment factors as a reason for workplace stress. While 63 (39.63%) have agreed with this to some extent, 65 (40.88%) have disagreed with the view in some way. Around 31 (19.50%) respondents have maintained a neutral view. Thus at first look the larger majority are not in agreement towards this variable as a stress factor.

Q No 7: I feel that we faced shortage of isolation beds and oxygen supply for patients during most of the pandemic duration

	n- 159	%
Strongly Agree	38	23.90
Agree	56	35.22
Neutral	23	14.47
Disagree	37	23.27
Strongly Disagree	5	3.14

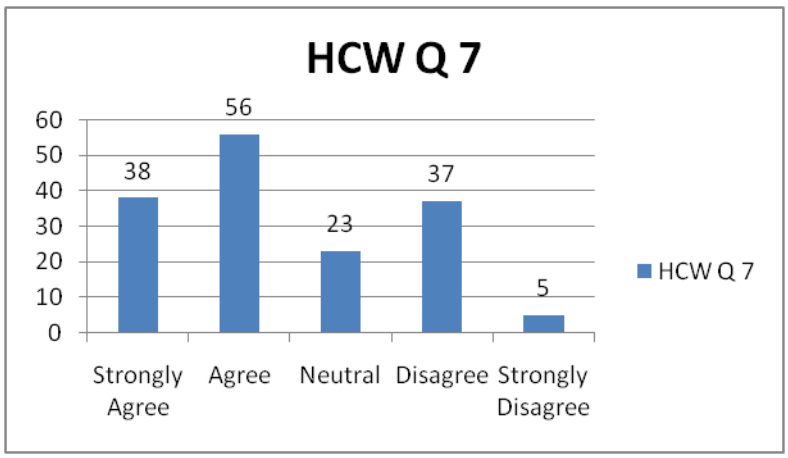


Fig 4.16: Responses to HCW Q 7

This question evaluates the perception regarding resource availability, adequacy and allotment issues during the covid pandemic. Out of the 159 responses, 38 (23.90%) have strongly agreed to the question and a further 56 (35.22%) have agreed to this while 23 (14.47%) are neutral responders. Five of them (3.14%) have strongly disagreed and 37 (23.27%) have disagreed with the assumption. Overall 94 out of 159 (59.12%) seem to have agreed to the question stating perceived shortage of isolation beds and oxygen supply whereas only 42 (26.41%) have disagreed in some way.

Construct-5:Frequently Changing Guidelines

Q No 10: I feel that the frequent changes in the treatment guidelines as the pandemic evolved interfered with my management and were a source of professional stress to me

	n-159	%
Strongly Agree	16	10.06
Agree	81	50.94
Neutral	27	16.98
Disagree	27	16.98
Strongly Disagree	8	5.03

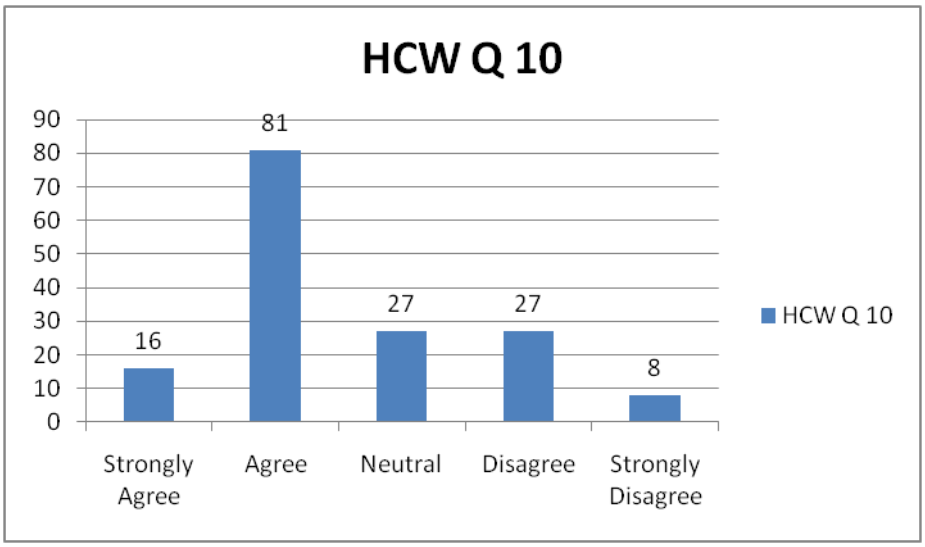


Fig 4.17: Responses to HCW Q 10

Out of the 159 responses received 97 (61%) have agreed or strongly agreed to the statement that frequent changing of treatment guidelines and other issues like period of isolation or hospital admission was a source of constant stress to the treating team. Only 35 (22%) have disagreed with this and 27 (16.98%) have maintained neutral status.

Construct-6: Administrative Support and Training

Q No 8: Our preparedness towards infection control and changes made to the facility layout was a source of workplace stress for me

	n-159	%
Strongly Agree	11	6.92
Agree	69	43.40
Neutral	31	19.50
Disagree	39	24.53
Strongly Disagree	9	5.66

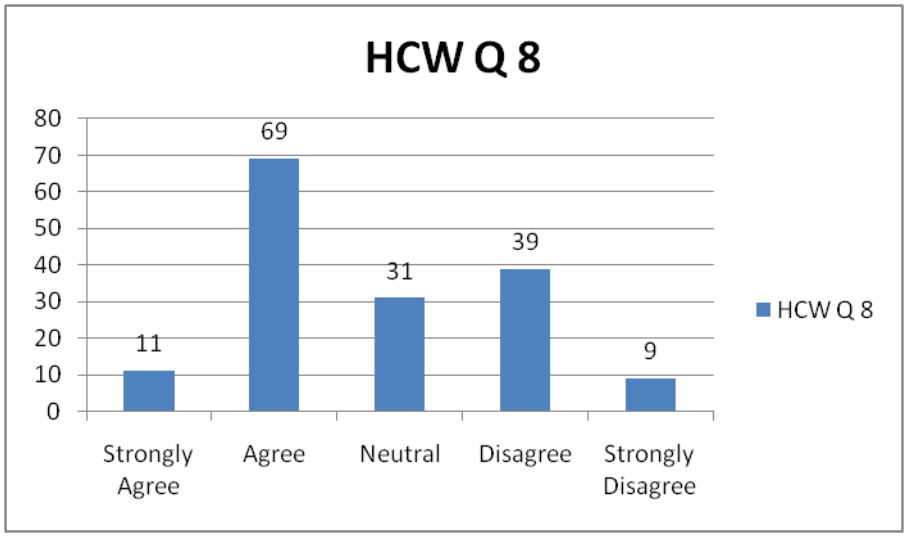


Fig 4.18: Responses to HCW Q 8

This question addresses the workplace stress in terms of administrative support and pre-event preparation in terms of training etc adding as a stress factor. Almost 80 (50.32%) out of 159 have agreed with this in some way either strongly agreed or agreed. Only 48 (30.19%) have disagreed with the question to some extent. Around 31 (19.50) have maintained neutral status.

Q No 9: I feel my treating team was adequately trained and had high motivation levels

	n-159	%
Strongly Agree	46	28.93
Agree	81	50.94
Neutral	18	11.32
Disagree	12	7.55
Strongly Disagree	2	1.26

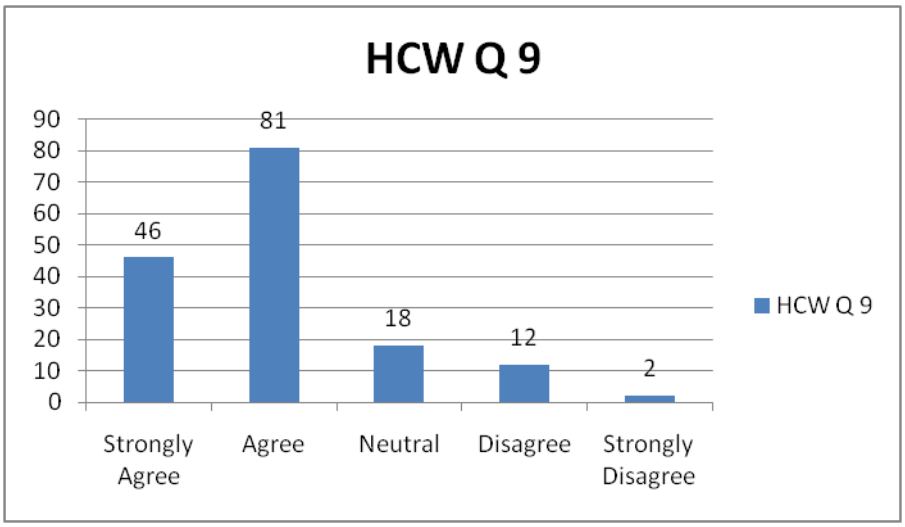


Fig 4.19: Responses to HCW Q 9

This question addresses the training aspect of the questionnaire. Most healthcare workers 127 (79.89%) seem to have either strongly agreed or agreed to this statement. Only 14 HCWs amounting to 8.81% have disagreed to any extent while 18 (11.32%) have maintained neutral stand.

Q No 12: I feel that there was adequate administrative and managerial support and communication for the health care workers during the pandemic

	n-159	%
Strongly Agree	18	11.32
Agree	75	47.17
Neutral	27	16.98
Disagree	29	18.24
Strongly Disagree	10	6.29

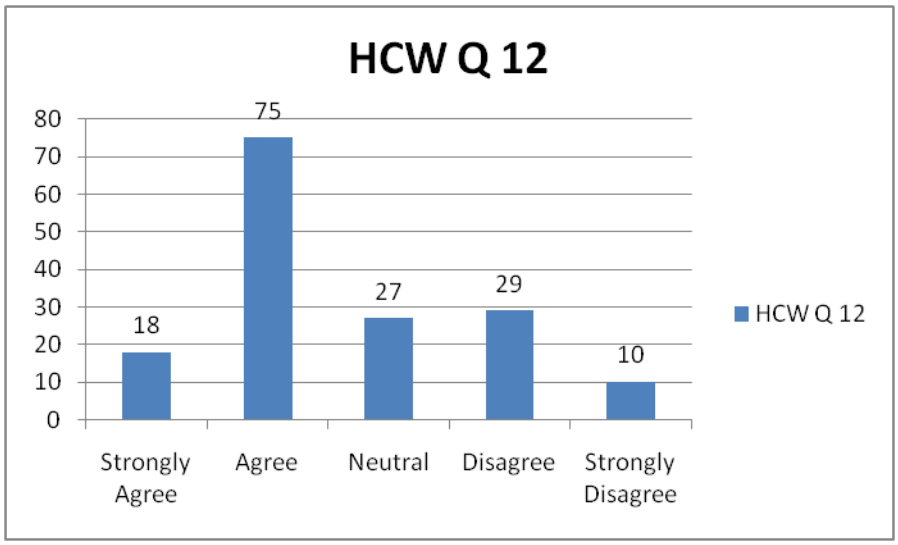


Fig 4.20: Responses to HCW Q 12

This question addresses the extent of administrative support, managerial support and communication received at the time of the pandemic. More than half of the responses 93 (58.49%) have agreed to the fact that there was adequate support while only 39 out of 159 corresponding to 24.53% felt otherwise. Neutral status was maintained by 27 (16.98%).

Q No 17: I feel that now I am better prepared for handling a similar situation in the future

	n-159	%
Strongly Agree	54	33.96
Agree	91	57.23
Neutral	5	3.14
Disagree	7	4.40
Strongly Disagree	2	1.26

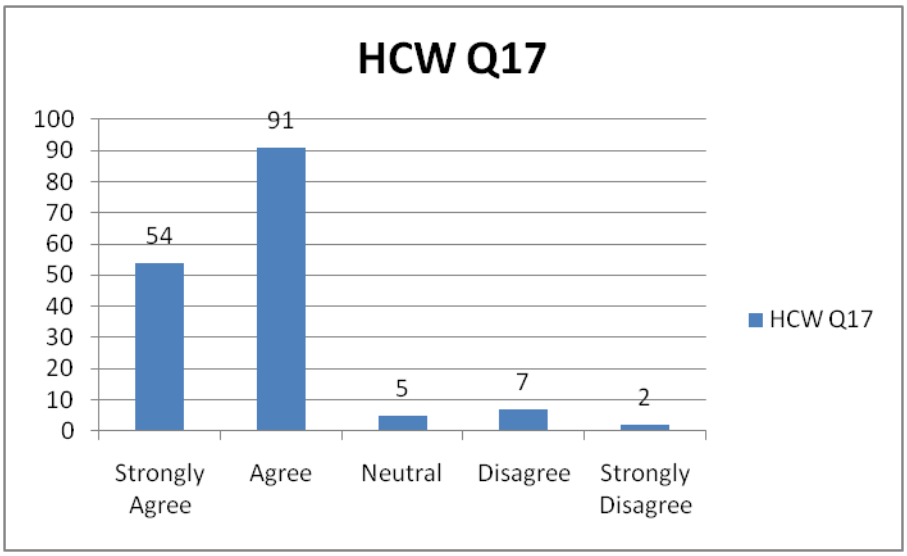


Fig 4.21: Responses to HCW Q 17

This question enquires about readiness and training for similar situations in future. Majority of the healthcare workers 145 out of 159 (91.19%) have agreed to this statement in some way and very few 9 (5.66%) have disagreed. Only 5 (3.14%) have maintained neutral status. Most healthcare workers felt this as a training opportunity for the future.

Construct-7: Biomedical waste Disposal Constraints

Q No 13: I was very much concerned about the biomedical waste disposal and likely spread of infections and was stressed due to these factors

	n-159	%
Strongly Agree	27	16.98
Agree	76	47.80
Neutral	30	18.87
Disagree	24	15.09
Strongly Disagree	2	1.26

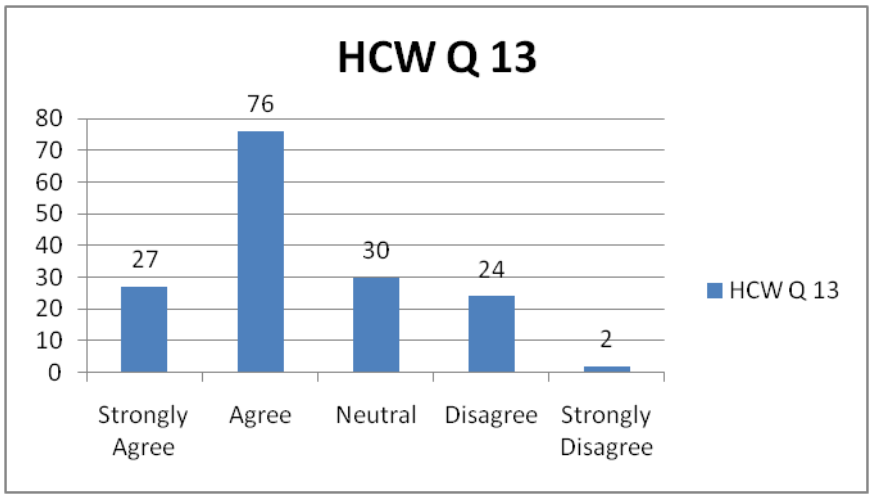


Fig 4.22: Responses to HCW Q13

Disposal of biomedical waste was an important aspect during the covid pandemic due to various lockdown guidelines as well as decrease in service and manpower availability for waste disposal. Almost 64.77% of the responses (103/159) have identified this as a source of workplace stress for them. A small number of health care workers 26 (16.35%) have disagreed while 30 (18.87%) have maintained neutral status i.e. neither agreed nor disagreed.

Construct-8: Physical Mental Fitness

Q No 11: I felt stressed during breaking of bad news to patients relatives frequently

	n-159	%
Strongly Agree	27	16.98
Agree	80	50.31
Neutral	28	17.61
Disagree	22	13.84
Strongly Disagree	2	1.26

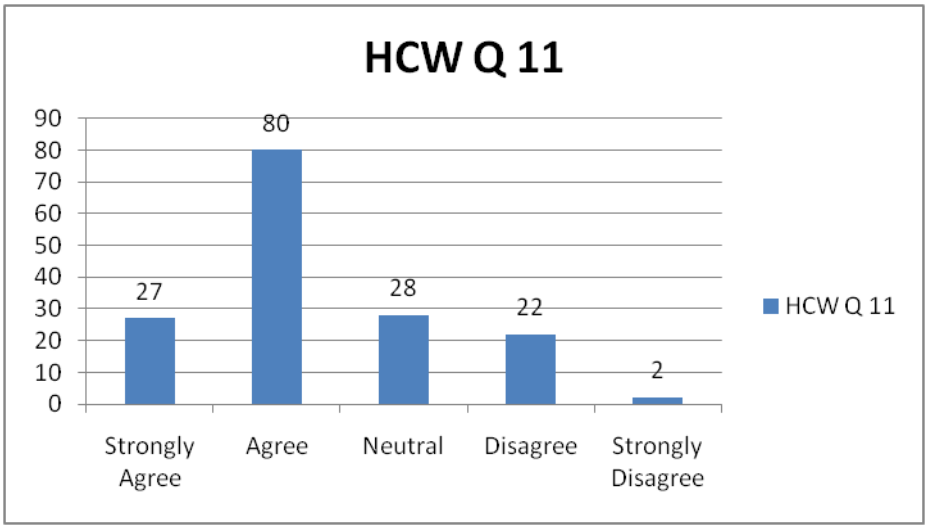


Fig 4.23: Responses to HCW Q 11

This question pertains to the stress felt by the health care worker due to the frequent breaking of bad news to the patients and their relatives especially something that happened during the second wave hospitalisations. A total of 107(67.29%) out of 159 perceived this as a stress factor while only 24 (15.10%) disagreed in some way and 28(17.61%) stayed neutral.

Q No 15: I was physically stressed due to the extended work schedules of the pandemic.

	n-159	%
Strongly Agree	42	26.42
Agree	66	41.51
Neutral	28	17.61
Disagree	21	13.21
Strongly Disagree	2	1.26

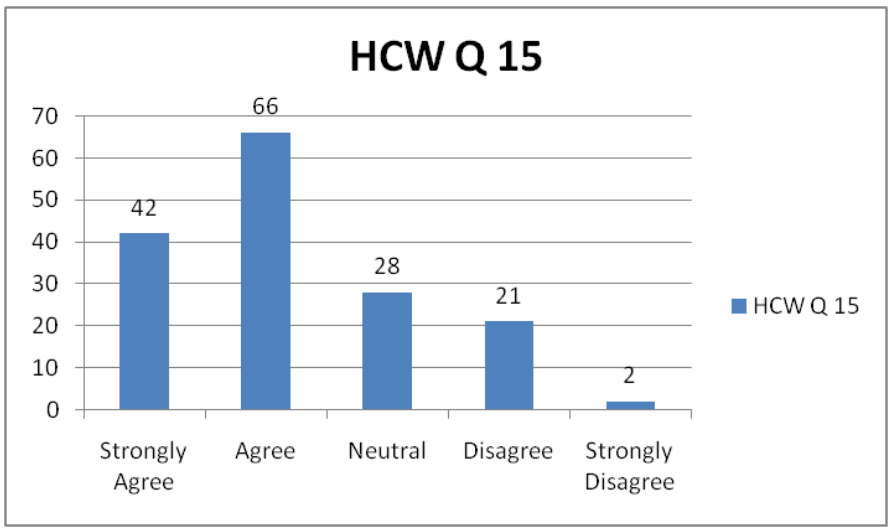


Fig 4.24: Responses to HCW Q 15

This question was meant to evaluate the physical as well as mental robustness of the health care worker when he had to put in longer and often unscheduled working hours wearing PPE (personal protection equipment) inside closed confines with restricted mobility and need for increased alertness. A total of 108 (67.93%) have agreed or strongly agreed with this while 28 (17.61%) have maintained neutral response. Only 23 (14.47%) have disagreed to the statement in some way.

Q No 16: My teams of healthcare workers were otherwise in good physical fitness shape.

	n-159	%
Strongly Agree	26	16.35
Agree	99	62.26
Neutral	18	11.32
Disagree	15	9.43
Strongly Disagree	1	0.63

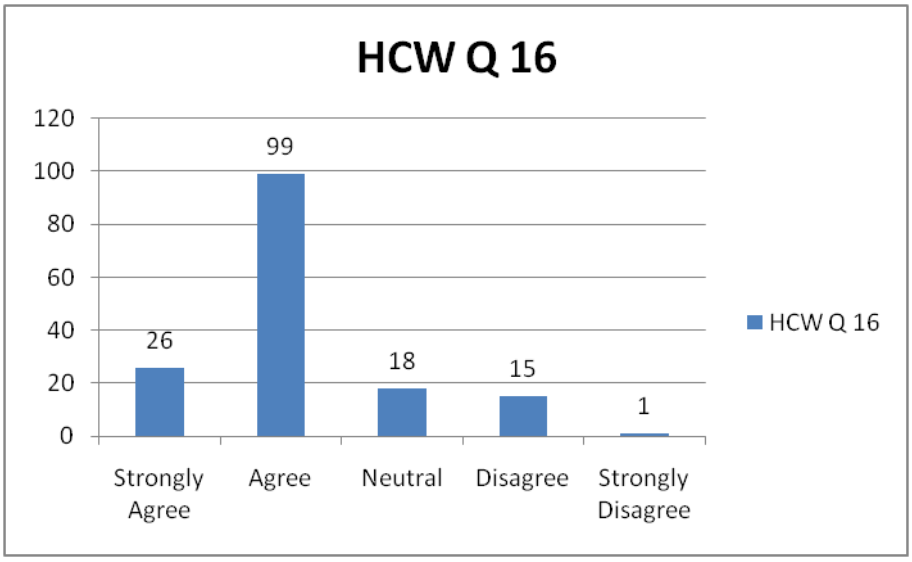


Fig 4.25: Responses to HCW Q 16

Along with questions 11 and 15 this response was also to enquire about the health status of the team as perceived by each of them. The large majority of 125 out of total 159 (78.61%) have either strongly agreed or agreed with this statement while 16 of them (accounting for approximately 10%) have disagreed with the question.

Chapter V

NON-COVID PATIENT SERVICES AND CLIENTELE SATISFACTION SURVEY

The corona virus disease (COVID-19) pandemic had placed a severe and hitherto unseen strain on health systems worldwide, with large and rapid changes in demand for inpatient care. Caring for COVID-19 patients while maintaining treatment for patients with other conditions is a complex planning challenge for healthcare workers at all levels. Ensuring safe and timely care to both COVID-19 patients and those with other conditions is a crucial aspect of the hospitals' response to this crisis.

A range of interventions were implemented to increase hospital capacity in response to the pandemic. Implemented hospital provision interventions included the procurement of equipment, the establishment of additional hospital facilities and the redeployment of staff and other resources. One of the most impactful interventions for freeing up bed capacity was the cancellation of elective surgery in March 2020 which led to a backlog of patients who required care otherwise. This led to the creation of pressure on health services to conduct outpatient departments on an essential basis as well as decide on elective surgeries that need to be addressed early or urgently such as oncology cases. These stoppages on the elective surgery as well as outpatient departments and general OPDs were repeatedly closed down or run with skeletal staff in the later part of the year too. The cases affected by these measures that were done in the interest of the public were non-covid cases since separate beds for covid cases were already laid down to enhance the surge capacity of the hospital. Changes in practice management and in consultation strategies were quickly adopted. There was a major switch towards telephone triage and consults, for covid-related as well as for non-covid related problems – more for the non-covid cases than the covid cases. One of the

reasons for telephonic consultations and triage of non-covid cases was the reduced testing done in initial months both due to availability as well as cost of testing. This led to concentration of testing of the essential and symptomatic and high-risk contacts than for the routine patients who would have come to the out-patient departments and emergency rooms.

This study was conducted in a 345 bedded secondary care military hospital situated in Western India. A secondary care hospital was chosen instead of super-specialty hospitals and other specialised care-giving centres in order to get a wholesome and complete image of commonly run out-patient departments as well as general OPDs. A review of data of all departments of the aforementioned hospital was conducted to collect data pertaining to the past years from 2017 onwards and compare how much changes has occurred in the pandemic years of 2020 till 31 Mar 2021. This covers the year 2020 when the effect of the pandemic was felt most acutely by an unprepared world prior to the availability of vaccines.

Results of the retrospective survey

The data was secondary data collected from the hospital and various departments pertaining to the years 2017 and beyond till 31 Mar 2021.

Type of hospital: Secondary care multi-specialty with all broad specialties except orthopaedics

No of beds: 345 beds

Average bed occupancy: 69.89 %

Average length of stay (all cases): 08.48 days

Table 5.1 Hospital Workload Annual Data

	Nature of Workload	2017	2018	2019	2020	31Mar21
1	Outpatient Total	68294	63812	78577	31423	6925
2	General OPD	38251	35192	51766	21577	4342
3	Specialist OPD	30043	28620	26811	9846	2583
3	In-patient workload	5821	5772	5262	2725	695
4	Emergencies	168	112	112	128	28
5	Total Hospital Deaths	12	10	6	16	4
6	Covid deaths	0	0	0	6	4

Table 5.2 Workload of Various Departments

	Department	2017	2018	2019	2020	31Mar 2021
1	General Medicine	4651	4503	3493	1218	448
2	General Surgery	1903	1778	1600	1304	70
3	Major Surgeries	348	358	425	254	15
4	Anaesthesia	489	554	526	288	83
5	Obstetrics & Gynaecology	829	738	693	456	129
6	Paediatrics	4837	3627	4322	1751	207
7	Ophthalmology	666	688	397	218	72

8	ENT	959	785	755	238	128
9	Dermatology	1685	2688	2028	494	38
10	Psychiatry	755	797	607	169	103
11	Radiology	12921	12104	11965	3456	1290
12	Immunisations	3627	2277	3024	982	162
13	Lab services total	236340	129198	238407	69294	18041

Trend of workload of outpatient departments at the hospital

The yearly total OPD of the hospital was in the range of 60 thousand to 65 thousand with approximately 40% to 50% of these being the general OPD. However it was observed that the total as well as the general OPD numbers decreased significantly in the pandemic year of 2020 and the first quarter of 2021 as depicted below.

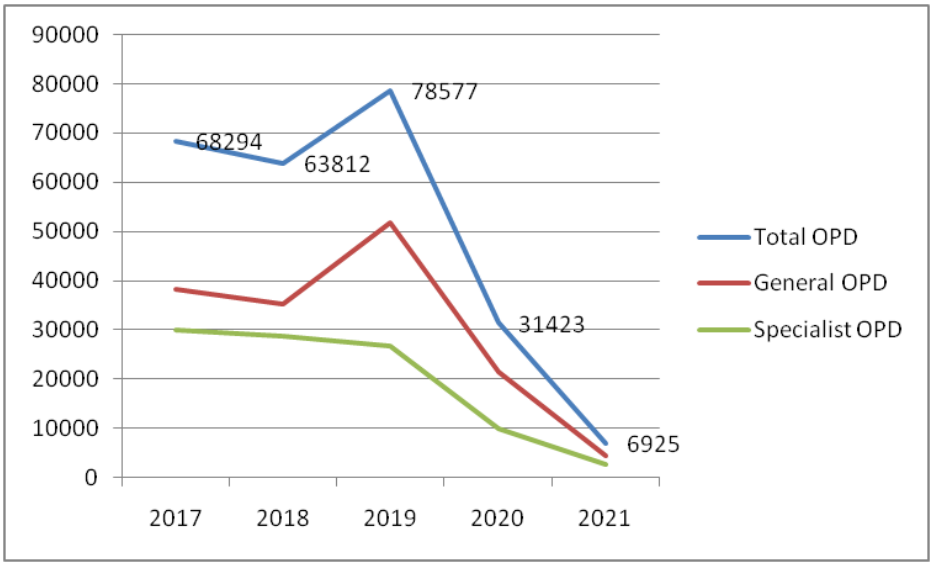


Fig 5.1 Trend of outpatient workload

To estimate the likely number of patients who missed the hospital OPD services in the pandemic duration, we estimated the average number of outpatient services of the

previous three years and the projected number for 2021 in the presence of the first quarter figures.

Table 5.3. Estimated reduction in outpatient numbers from average of past three years

	Average of past three years	2020	% Change	2021 Estimated	% Change
Total OPD	70228	31423	**44.74**	27700	**39.44**
General OPD	41736	21577	**51.69**	17368	**41.61**
Spl OPD	28491	9846	**34.56**	10332	**36.26**

The figure below depicts the declining trend of patient numbers reporting to all OPDs of the hospital.

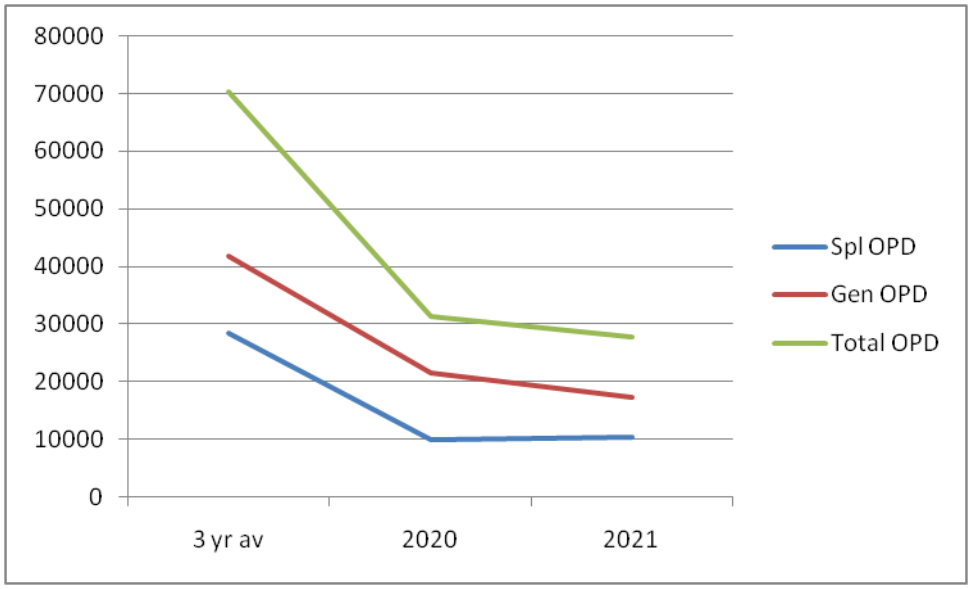


Fig 5.2 **Reduction in all outpatient numbers from average of past three years**

During the calendar year 2020, the total OPD numbers reduced to 44.74% of the average while the general OPD and specialist OPDs reduced to 51.69% and 34.56% of the three year average respectively. Similarly for the year 2021the calculated numbers of the total, general and specialist OPDs reduced to 39.44%; 41.61% and 36.26% of the three year average numbers. These numbers are in consonance to the average reduction of 40% cited in the media in the second half of the last year.

Emergency Care and Mortality Numbers

The emergency visits of non-covid cases did not show a decrease in relation to the number of patients reporting to the hospital outpatient departments. In fact there was a small increase in the number of patients reporting to the emergency rooms from 112 the previous year to 128 in the year 2020. This assumes significance when viewed as a fraction of the total patients reporting to the hospital in that year i. e. from 0.2% to 0.4%.

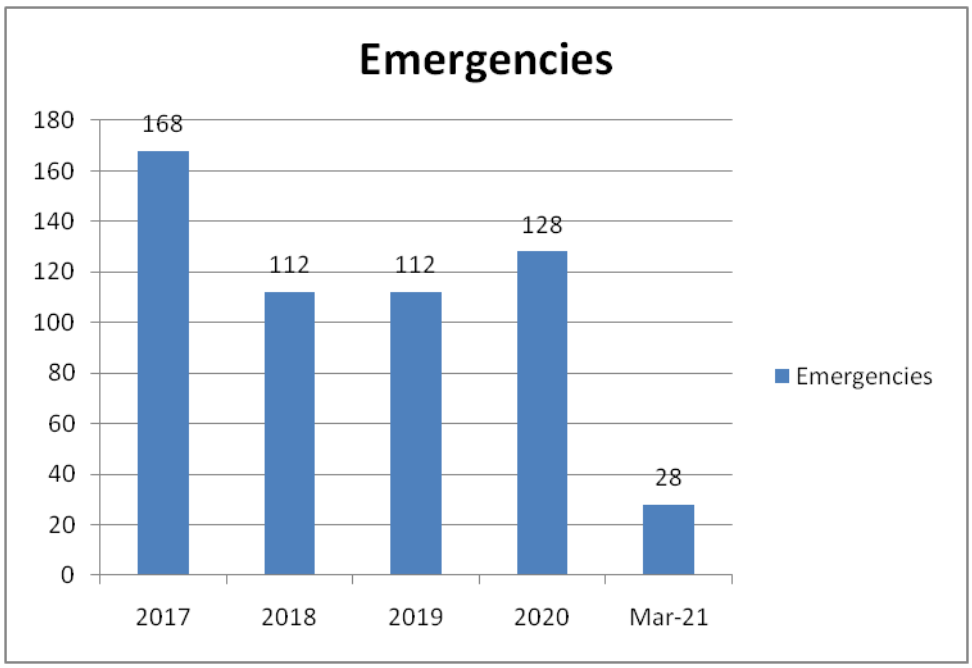


Fig 5.3 Trend of emergency room visits pre-covid and covid years

All cause mortality rates however showed a significant increase from the existing numbers of the past three years. The figure below depicts mortality from all causes covid as well as

non-covid for the years 2020 and 2021. For the year 2020 ten deaths were due to non-covid and six deaths were due to covid related causes. For the year 2021 data shows a total of 34 deaths from covid and non-covid causes.

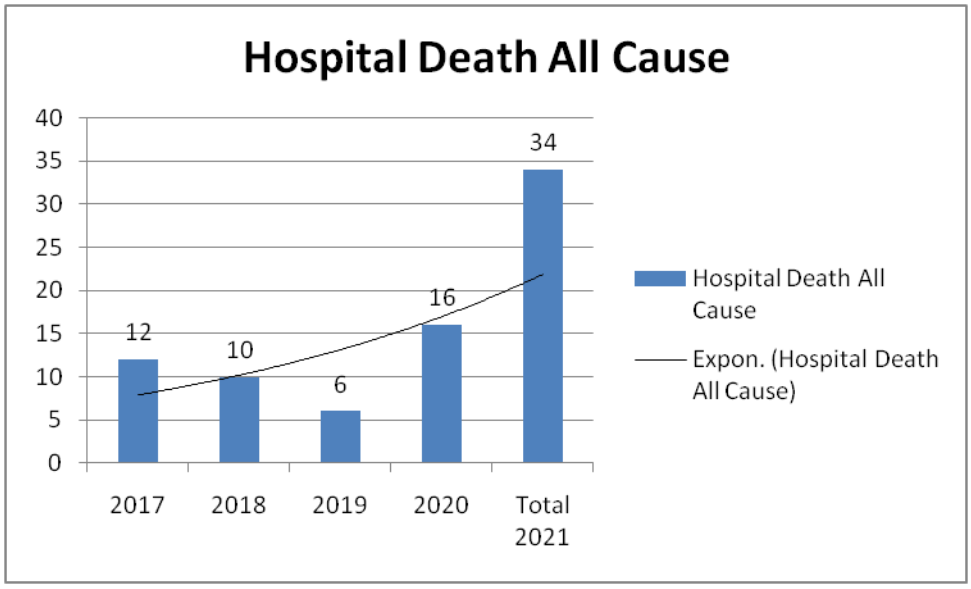


Fig 5.4 All cause hospital deaths

Effect of the pandemic on workload of various departments of the hospital

The trend of the overall workload reduction in all departments including lab services, radiology and all major surgeries is reflected in aforementioned Table 5.1. In order to reflect these numbers so as to arrive at an objective percentage reduction in numbers, percentage of the past three year figures were calculated as shown below.

Table 5.4 Changes in workload for various departments from 3-year average pre-covid

	3 yr Av	2020	Percentage	2021 est	Percentage
General Medicine	4216	1218	**28.89**	1792	**42.51**
General Surgery	1760	1304	**74.08**	280	**15.91**
Major Surgeries	377	254	**67.37**	60	**15.92**

Anaesthesia	523	288	**55.07**	332	**63.48**
Obstetrics & Gynaecology	753	456	**60.53**	516	**68.50**
Paediatrics	4262	1751	**41.08**	828	**19.43**
Ophthalmology	584	218	**37.35**	288	**49.34**
ENT	833	238	**28.57**	512	**61.46**
Dermatology	2134	494	**23.15**	152	**7.12**
Psychiatry	720	169	**23.48**	412	**57.25**
Radiology	12330	3456	**28.03**	5160	**41.85**
Immunisations	2976	982	**33.00**	648	**21.77**

Overall reduction in the total specialist OPD was by 34.56% for the year 2020 and 36.26% for the year 2021 estimated for full year.

Major reductions are seen in the departments of general medicine, ENT, dermatology and psychiatry. The reduction in general medicine is explained by the patients collecting medicines from the general OPD or perhaps procuring on their own due to various government schemes of reimbursement. These patients with chronic ailments need usually a three-month review and collection of medicines on a monthly basis done at general departments. Similarly reduction in dermatology or skin OPD is explained by the fact that patients avoided hospitals except where necessary in view of covid cases being concentrated more in health care setups than in community.

ENT surgeries being high risk contact surgeries were reduced during the period of the pandemic and hence the numbers of cases are grossly reduced in these departments. Elective radiology examinations and elective surgeries for eye department were postponed due to the lockdown as well as regulations to avoid non-essential surgeries. This resulted in the number of patients being less.

No increase in psychiatric emergencies were observed.

The least reduction of cases was in the department of obstetrics and gynaecology which continued to be kept busy during the pandemic.

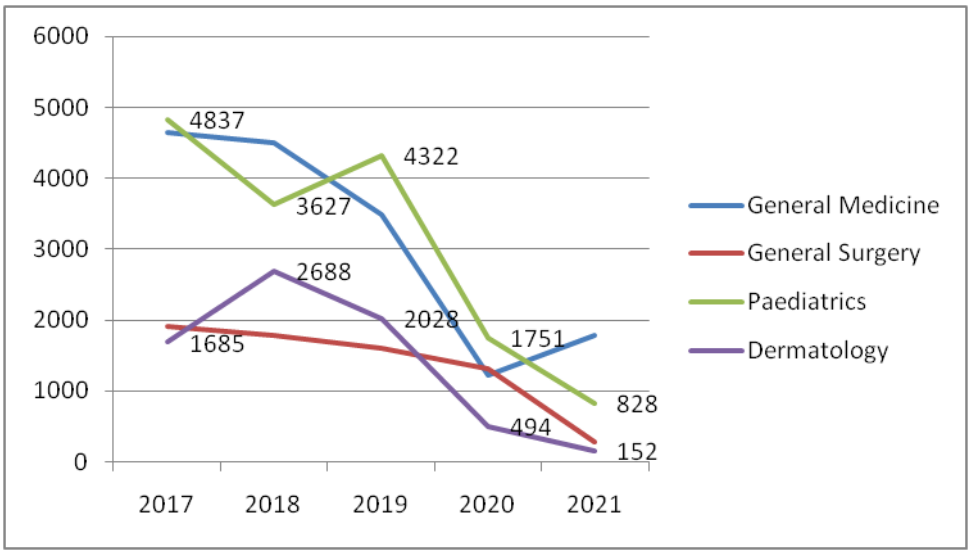


Fig 5.5. Trend of larger specialist OPDs

PATIENT SATISFACTION SURVEY

The first part of this chapter depicting the analysis of the secondary hospital data collection as above gave us a fair idea of the decrease in number of patients in various departments as well as the general OPD. The next step was to assess the degree of health care which is being provided presently (towards the end of 2021) and how is this being perceived by the clientele. It was fair to assume that the second wave had largely receded but to what extent has the hospital services come back as on date needed to be assessed.

This study was carried out using the standard Short Form Patient Satisfaction Questionnaire PSQ-18. The questionnaire is a well established and standardised questionnaire used in the field of medicine to assess patient satisfaction in hospital settings. Patient Satisfaction Questionnaire Short Form (PSQ18) was originally developed by RAND Healthcare organisation of the USA as a shortened form of original PSQ. The initial PSQ was an extensive and cumbersome model with more than 80 responses in the initial forms and subsequently about 50 responses in PSQ-III and was the precursor for the short form PSQ18 developed by Willis H. Ware and his colleagues (Ware Snyder and Wright 1976).

The PSQ-18 is a short form version that retains many characteristics of its full-length counterpart. The PSQ sub-scales show acceptable internal consistency reliability. Furthermore, corresponding PSQ-18 and PSQ-III subscales substantially correlate with one another. The PSQ-18 is found appropriate for use in situations where the need for brevity and a larger audience precludes administration of the full-length PSQ-III. The PSQ-18 takes approximately 3-4 minutes to complete (Ware Snyder, and Wright 1976).

The standard Short Form PSQ18 contains 18 questions covering seven dimensions for satisfaction from medical care namely **general satisfaction; technical quality; interpersonal matter; communication; time spent with doctor; financial aspects and accessibility and convenience.** Of these parameters the financial parameter was not of consequence in government funded hospitals where this study was done. Instead two questions (Q No 5& 7) were replaced with questions related to pandemic such as covid – preventive and containment measures observed by the patient. Thus these questions replaced questions at numbers 5 and 7 in the PSQ-18 used by our team.

The Modified PSQ-18 is depicted as Annexure-I. Constructs have been made as given below Table 5.6

Table 5.6: CREATING SCORING SYSTEM (CONSTRUCTS)

	SCALE	**AVERAGE OF THESE SCORES**
C-1	General Satisfaction	3,17
C-2	Technical Quality	2,4,6,14
C-3	Interpersonal Matter	10,11
C-4	Communication	1, 13
C-5	Covid Preventive Aspects	5,7
C-6	Time Spent With Doctor	12,15
C-7	Accessibility and Convenience	8,9,16,18

Typically a higher score has a better alignment of the patients' satisfaction levels with that of the health care centre.

A total of 174 responses were obtained in both Hindi and English version of the modified PSQ 18 from hospitals located in north, west and southern parts of the country. The results of the survey are as described below.

The tables reflect the number of respondents in various categories out of a total of 174. The charts are based on the total figures and their proportions and percentages are reflected by the pie-diagram.

The following pages have recorded the responses received on the modified PSQ18 from patients of numerous hospitals in the country.

Demographics

Age Distribution: The age distributions were as shown below with largest number being in the 25 years to 40 years of age followed by the 40 years to 55 years age bracket. Total-174

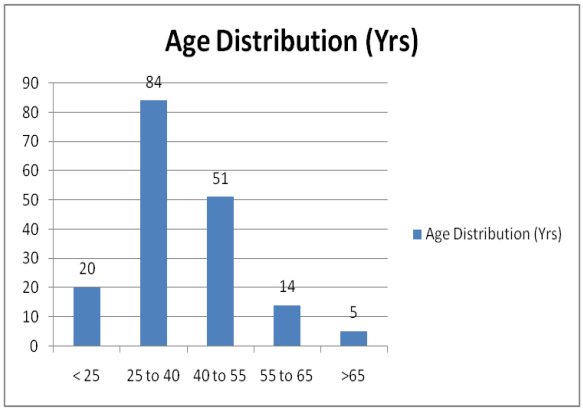


Fig 5.6: Age distribution of patients (numbers)

Age	n-174	%
< 25	20	11.49%
25 to 40	84	48.27%
40 to 55	51	29.31%
55 to 65	14	8.04%
>65	5	2.87%

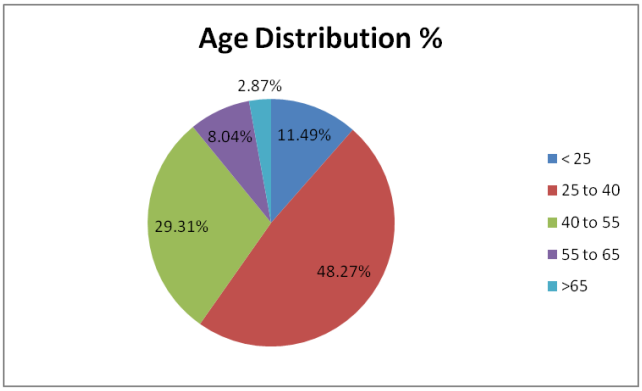


Fig 5.7: Age distribution of patients in percentage

The 25 to 40 year age group was 48.27% of the respondents. The elderly were only 2.85% of the respondents.

Gender Distribution (n=174)

There were 125 males and 49 females among the respondents. The preponderance of males is probably explained by the fact that these were military hospitals. This also explains the major age group being in the 25 to 40 year bracket.

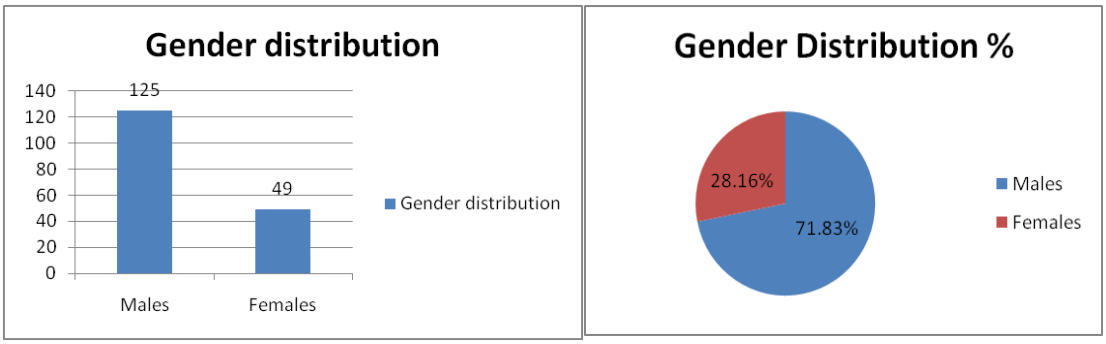


Fig 5.8: Gender distribution of patients in numbers

Responses to Q No 1 to Q No 18 of the modified PSQ18 arranged along each construct are as follows:

Construct-1: General Satisfaction

Q No 3: The medical care I have been receiving is just about perfect or the standard care

This question pertains to the general satisfaction parameter of the clientele feedback and compares the care he is receiving to the standard care as perceived by the patient.

Strongly Agree	130	74.71%
Agree	40	22.98%
Uncertain	4	2.29%
Disagree	0	0
Strongly Disagree	0	0

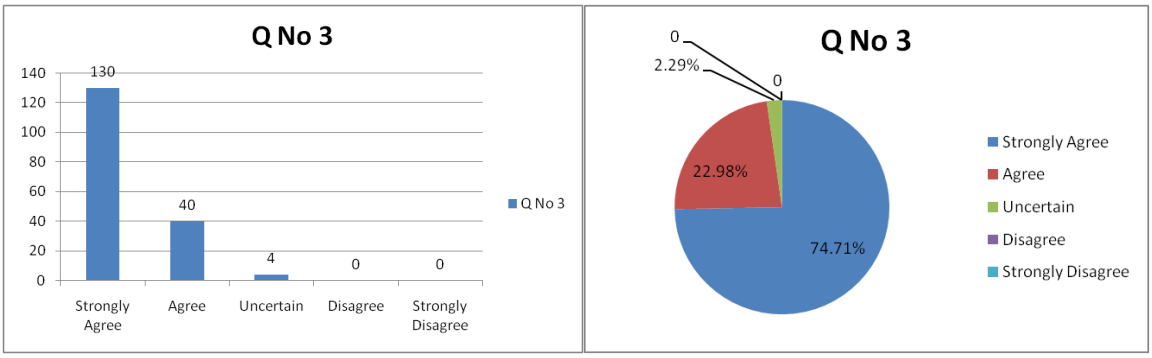


Fig 5.9: Patient responses to Q No 3 in numbers and percentage

Out of the total number 130 (74.71%) strongly agreed in favour of the care being standard and another 40 (22.98%) agreed to this. Thus most patients 170 out of 174 (97.74%) agreed with a favourable response.

Q No 17: I am dissatisfied with some things about the medical care I receive

Strongly Agree	3	1.72%
Agree	7	4.02%
Uncertain	10	5.74%
Disagree	74	42.52%
Strongly Disagree	80	45.97%

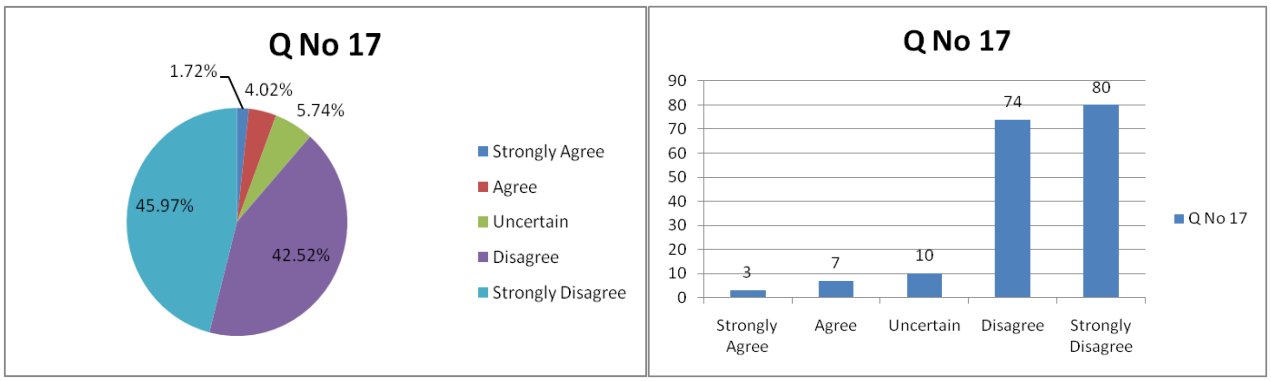


Fig 5.10: Patient responses to Q No 17

This question evaluates the overall general satisfaction level of the patient without specifying any particular area and is worded as a negative response question.

Out of the total 174 patients 80 (45.97%) have given a very favourable 'strongly disagree' response and another 74(42.52 %) have given a favourable 'disagree' response.

Only three patients (0.57%) has given a very unfavourable 'strongly agree' response while 7 (4.02%) have given an unfavourable response of 'agree' and 10(5.74%) have remained 'uncertain' to the question. Thus overall picture that emerges is positive with 154 out of 174 (88.50%) have given a favourable response in terms of overall satisfaction with medical care they received.

Construct-2: Technical Quality

Q No 2: I think my doctor's office has everything needed to provide complete medical care

Strongly Agree	132	75.86%
Agree	37	21.26%
Uncertain	2	1.15%
Disagree	0	0
Strongly Disagree	1	0.57%

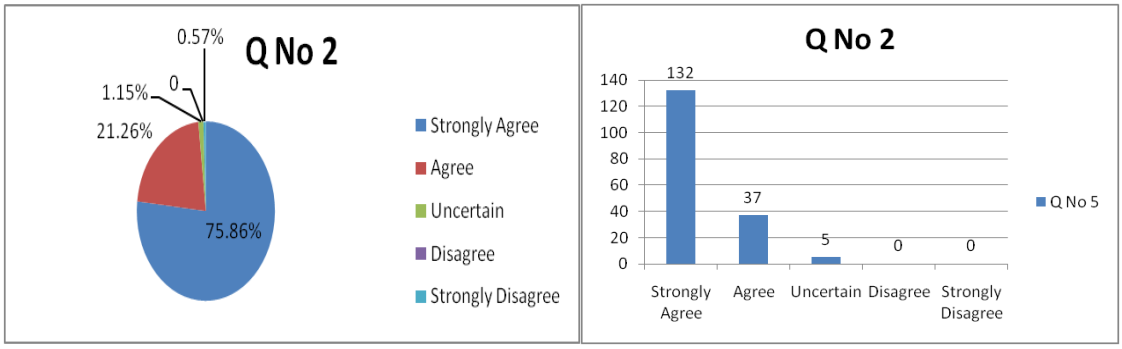


Fig 5.11: Patient responses to Q No 2 in percentage and numbers

This question has relevance to the technical quality parameter of the modified PSQ18 and pertains to how well equipped the medical set up is as perceived by the patient clientele.

Out of the total 174 respondents 132 (75.86%) strongly agreed to the the doctors office being equipped to handle his medical condition and another 37 (21.26%) of the respondents supported this.Thus a total of 169 respondents felt that the docotrs office has evrthing needed corresponding to 97.12%.

Q No 4: Sometimes doctors make me wonder if their diagnosis is correct

Strongly Agree	103	59.19 %
Agree	40	22.98 %
Uncertain	10	5.74 %
Disagree	14	8.04 %
Strongly Disagree	7	4.02 %

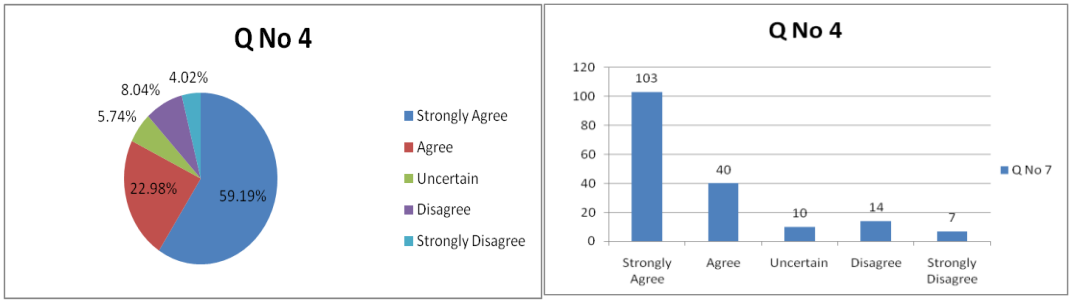


Fig 5.12: Patient responses to Q No 4 in percentage and numbers

This question above pertains to the technical quality of the patient feedback in terms of how the patient feels if the diagnosis of the doctor is correct.

Out of the total 174 respondents 103 (59.19%) have strongly agreed with his question and another 40 (22.98%) have agreed to the fact that they are unsure of the doctors diagnosis! Thus around 143 out of 174 (82%) of the respondents felt unsure of their doctors diagnosis!

Further 10 (5.74%) are undecided on this and the remaining proportion of 21(12.06) appear to agree with the diagnosis of the treating doctor. These results are unfavourable to the feedback regarding the hospital medical care but can be explained by the fact that diagnosis is a technical matter that the patient may or may not be convinced of!

There were no inconsistencies in the English or the Hindi version of the feedback and the results are not unlikely to be due to the language understanding or incongruity.

Q No 6: When I go for medical care they are careful to check for everything when treating and examining me.

Strongly Agree	124	71.26%
Agree	46	26.44%
Uncertain	3	1.72%
Disagree	0	0
Strongly Disagree	1	0.57%

This question once again pertains to the technical quality parameter of the PSQ18 along with previous questions no 2 and 4. A total of 170 patients (124 have agreed strongly and 46 have agreed) have given a positive feedback for the doctors examining their patients

thoroughly. Thus 97.6% of patients in the survey felt that their doctors check for everything during treatment and examination.

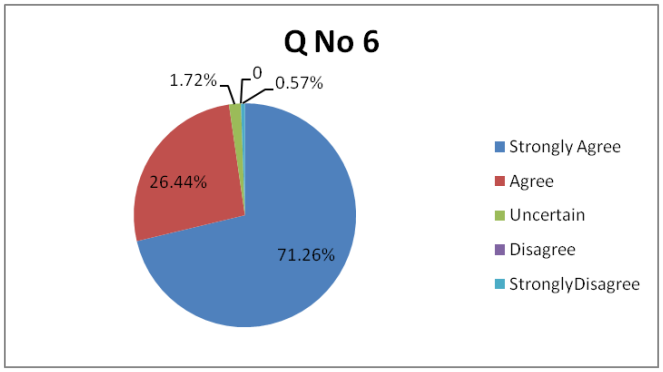


Fig 5.13: Patient responses to Q No 6 in percentage

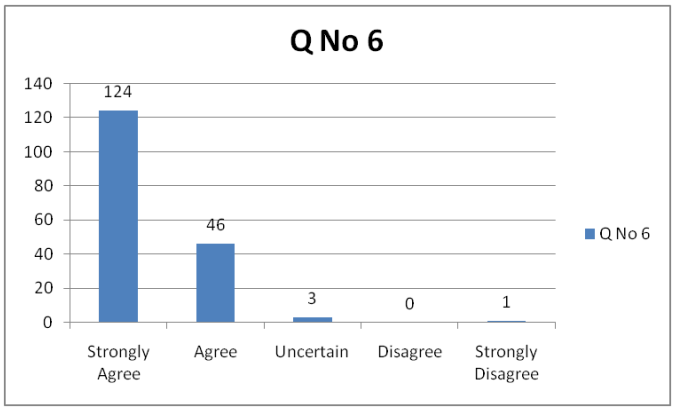


Fig 5.14: Patient responses to Q No 6 in numbers

Q No 14: I have some doubts about the ability of the doctors who treat me

Strongly Agree	1	0.57%
Agree	3	1.72%
Uncertain	2	1.15%
Disagree	78	44.82%
Strongly Disagree	90	51.72%

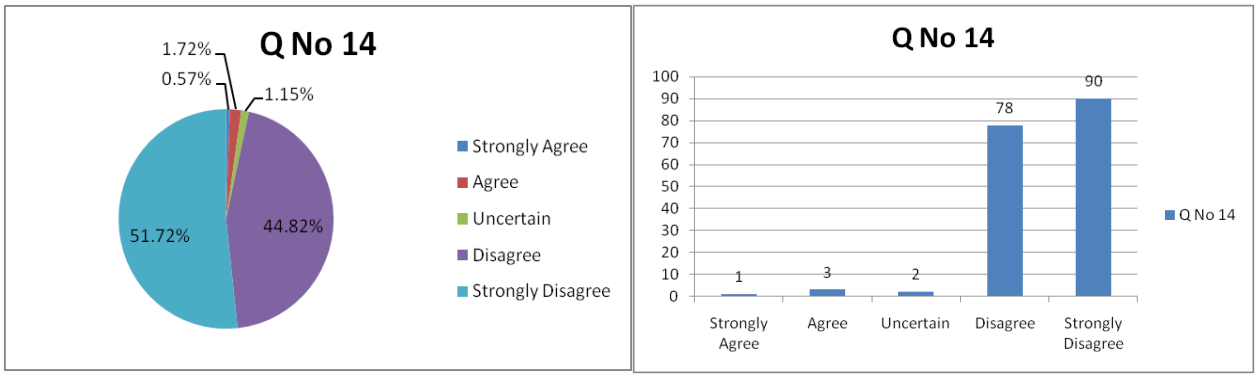


Fig 5.15: Patient responses to Q No 14

This question along with question numbers previous 2, 4 and 6 evaluates the 'technical quality' of the medical care as perceived by the patient. This feedback questions the ability of the doctor to provide adequate medical care. Out of the total 174 patient respondents 90 (51.72%) have given a very favourable 'strongly disagree' response and another 78 (44.82 %) have given a favourable 'disagree' response.

Only one (0.57%) patients have given a very unfavourable 'strongly agree' response; 3 (1.72%) have given an unfavourable response of 'agree' and 2 (1.15%) have remained 'uncertain' to the question. Thus overall 168 out of 174 (96.55%) have given a favourable response.

Construct -3: Interpersonal Matters

Q No 10: Doctors act too impersonal and business-like towards me.

Strongly Agree	3	1.72%
Agree	4	2.29%
Uncertain	6	3.44%
Disagree	84	48.28%
Strongly Disagree	77	44.25%

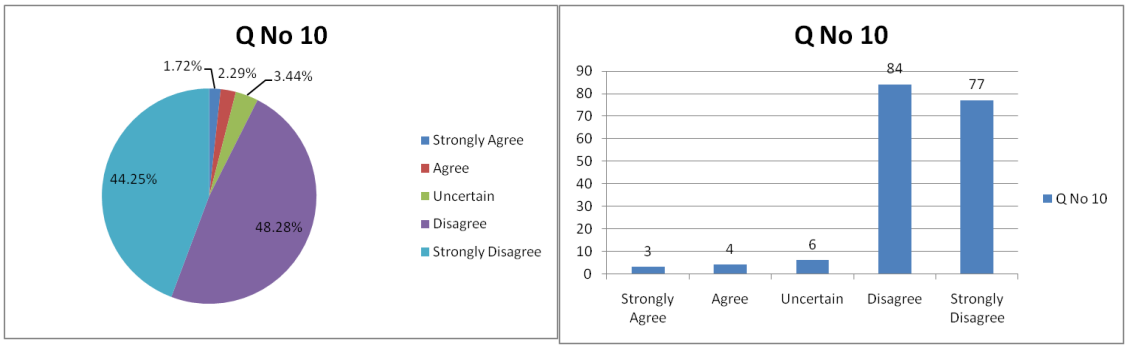


Fig 5.16: Patient responses to Q No 10

This response evaluates the 'interpersonal matter' parameter of the PSQ18 questionnaire and questions the approach, attitude and behaviour of the doctor towards the patient by enquiring if the doctors are too impersonal and business-like towards the patient-clientele. A majority number of 161 out of 174 (92.52%) have given a favourable response and 6 (3.44%) have remained neutral uncertain.

Q No 11: My doctors treat me in a very friendly and courteous manner

Strongly Agree	140	80.46%
Agree	31	17.81%
Uncertain	1	0.57%
Disagree	2	1.15%
Strongly Disagree	0	0

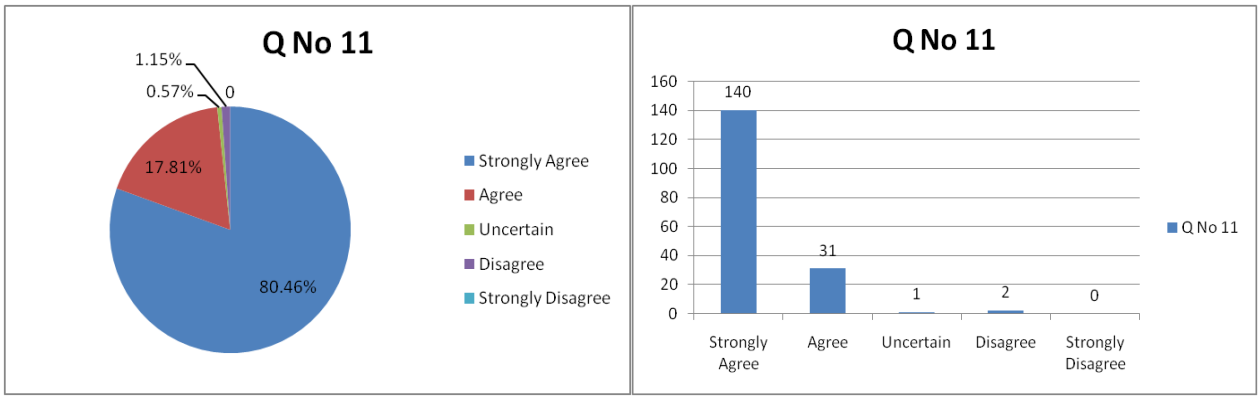


Fig 5.17: Patient responses to Q No 11

This response too evaluates the 'interpersonal matter' parameter of the PSQ18 questionnaire and questions the approach, attitude and behaviour of the doctor towards the patient by enquiring if the doctors are friendly and courteous towards their patients.

Out of the total 174 respondents 140 (80.46%) have strongly agreed to this and another 31 (17.81%) have agreed to this question thus giving an almost complete (171 out of 174) favourable response.

Construct-4: Communication

Q No 1: My doctors are good at explaining the reason for my tests

Strongly Agree	133	76.43%
Agree	38	21.84%
Uncertain	2	1.15%
Disagree	0	0
Strongly Disagree	1	0.57%

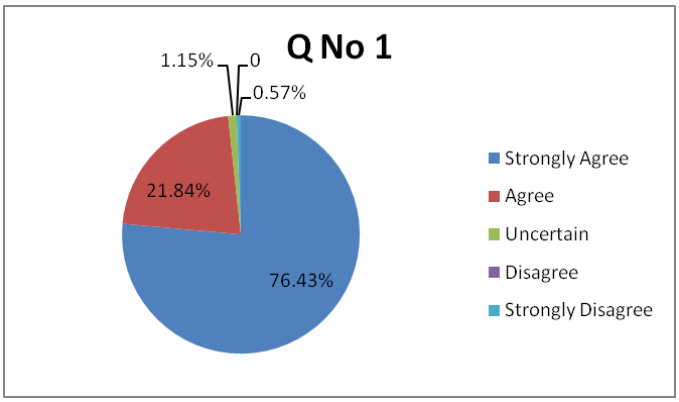


Fig 5.18: Patients responses to Q No 1 in percentages

Out of the total of 174 respondents, 133 (76.43%) felt strongly that their doctors are good at explaining the required tests and a further 38 (21.84%) agreed with the same. Very few patients disagreed or were uncertain about this fact. This question is related to the

feedback regarding the domain of communication between the patient and the doctor and the overwhelming majority of patients (over 98%) have voiced a favourable opinion.

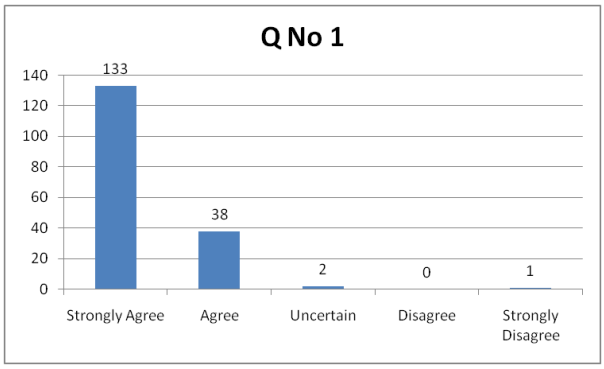


Fig 5.19: Patients responses to Q No 1 in numbers

Q No 13: Doctors sometime ignore what I tell them

Strongly Agree	2	1.15%
Agree	2	1.15%
Uncertain	8	4.59%
Disagree	78	44.82%
Strongly Disagree	79	45.40%

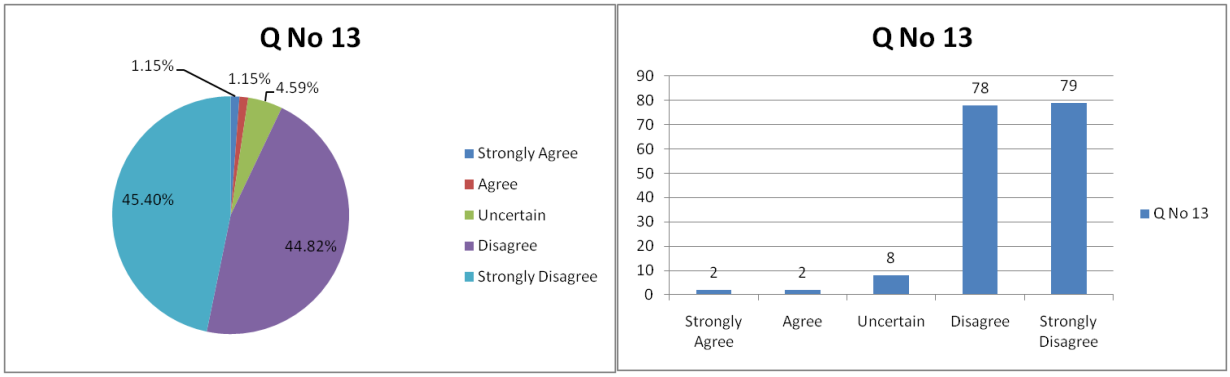


Fig 5.20: Patient responses to Q No 13

This question along with the first question pertains to the 'communication' parameter of the modified PSQ18. Of the total 174 patients 79 (45.40%) have given a very favourable 'strongly disagree' response and another 78 (44.82%) have given a favourable 'disagree' response.

Only 2 (1.15%) patients have given a very unfavourable 'strongly agree' response; another 2 (1.15%) have given an unfavourable response of 'agree' and 8 (4.59%) have remained 'uncertain' to the question. Thus a majority count of 157 out of 174 accounting for 90.22% have given a favourable response.

Construct-5: Covid Preventive Aspects

Q No 5: I feel adequate use of face-mask and social distancing is being maintained at the facility

Strongly Agree	136	78.16%
Agree	36	20.68
Uncertain	1	0.57%
Disagree	1	0.57%
Strongly Disagree	0	0

This question in the modified PSQ18 pertains to the perception regarding anti COVID pandemic measures being implemented at the health care facility. Out of the total respondents 136 (78.16%) patients strongly agreed and another 36 (20.86) agreed with the fact that social distancing norms and wearing of face masks are in place at the healthcare facility. Military hospitals have strict norms of wearing masks and social distancing in the disciplined population and thus the results are favourable to the health care facility.

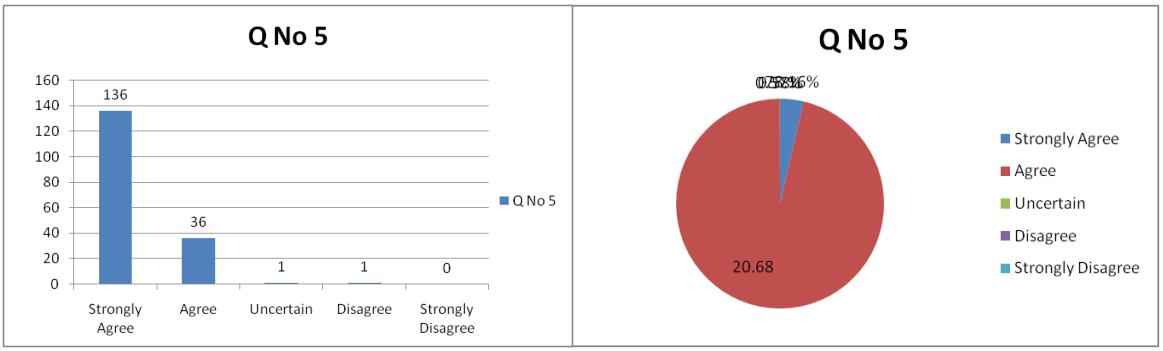


Fig 5.21: Patient responses to Q No 5 in numbers and percentages

Q No 7: I feel adequate hand-hygiene and other covid precautions by staff are in place at this hospital

Strongly Agree	140	80.46%
Agree	31	17.81%
Uncertain	1	0.57%
Disagree	2	1.15%
Strongly Disagree	0	0

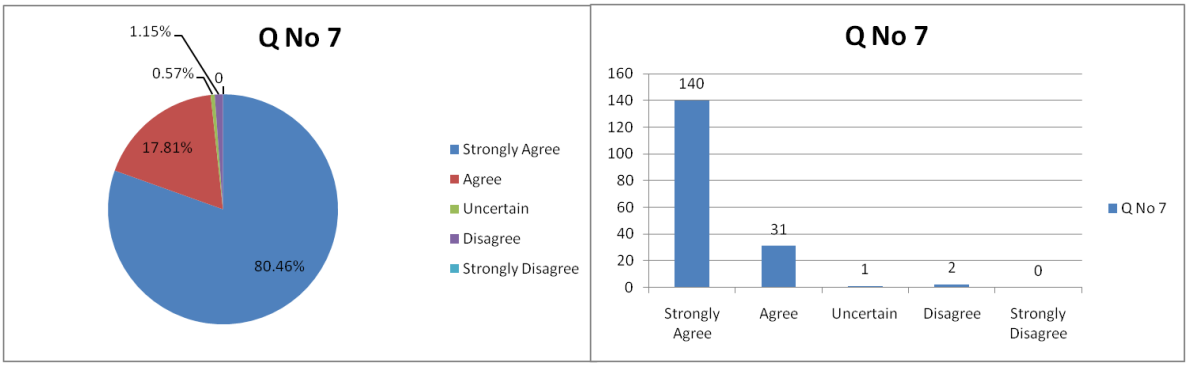


Fig 5.22: Patient responses to Q No 7 in percentage and number

This question in the modified PSQ18 pertains to the perception regarding anti-COVID pandemic measures being implemented at the health care facility. Out of the total

respondents 140 (80.46%) patients strongly agreed and another 31 (17.81%) agreed with the fact that adequate hand-hygiene and other covid precautions by staff are in place at this hospital. This was a favourable response of patients as almost 98% patients felt that anti-COVID measures were in place adequately.

Construct-6: Time Spent with doctor

Q No 12: Those who provide my medical care sometimes hurry too much when they treat me

Strongly Agree	3	1.72%
Agree	13	7.47%
Uncertain	8	4.59%
Disagree	80	45.97%
Strongly Disagree	70	40.22%

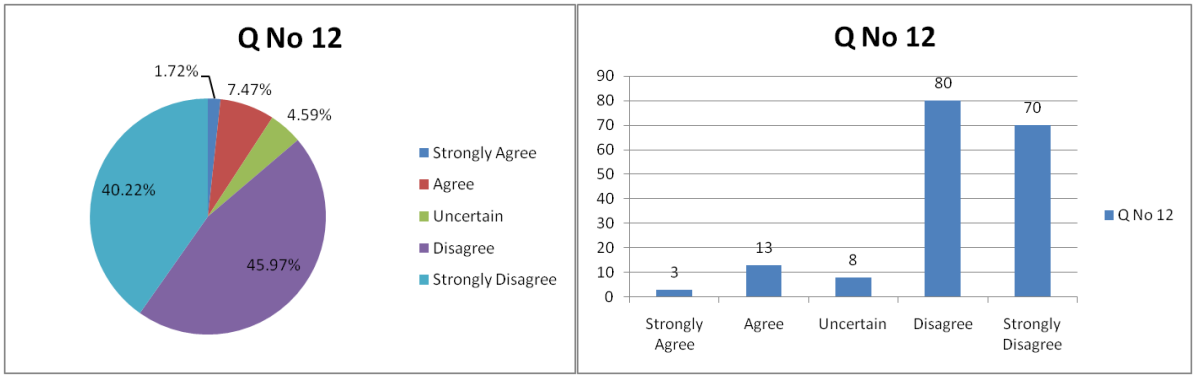


Fig 5.23: Patient responses to Q No 12

This question of the modified PSQ18 pertains to the time spent by the doctor with the patient. Out of the total 174 patient respondents 70 (40.22%) have given a very favourable 'strongly disagree' response and another 80 (45.97%) have given a favourable 'disagree' response.

Only 3 (1.72 %%) patients have given a very unfavourable 'strongly agree' response; 13 (7.47%) have given an unfavourable response of 'agree' and 8 (4.59%) have remained 'uncertain' to the question. Thus overall 150 out of 174 accounting for 86.20% have given a favourable response.

Q No 15: Doctors usually spend adequate time with me

Strongly Agree	99	56.89%
Agree	65	37.36%
Uncertain	7	4.02%
Disagree	1	0.57%
Strongly Disagree	2	1.15%

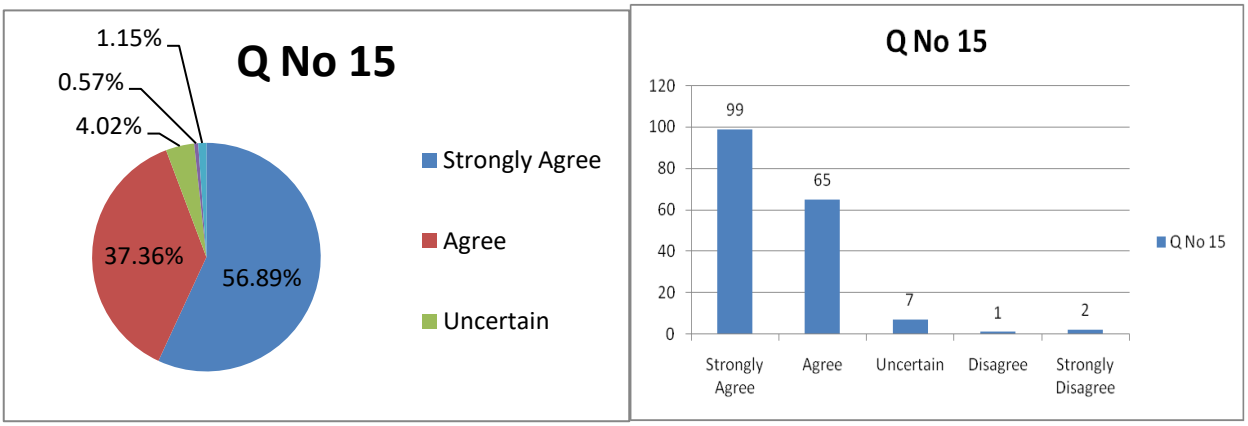


Fig 5.24: Patient responses to Q No 15

This question along with previous question number 12 enquires about the amount of time spent by the doctor with the patient and is an important parameter of perceived care.

Out of the 174 responses received, 99 patients have strongly agreed with the question and 65 have agreed with the question accounting for 56.89% and 37.36 % respectively, thereby giving a positive response. Thus a total of 164 out of 174 felt that adequate time

was being given to them by the doctor. Seven patients were uncertain and a very small number disagreed with the question in some way.

Construct-7: Accessibility and Convenience

Q No 8: I have easy access to medical specialists I need

Strongly Agree	123	70.68%
Agree	46	26.44%
Uncertain	2	1.15%
Disagree	1	0.57%
Strongly Disagree	2	1.15%

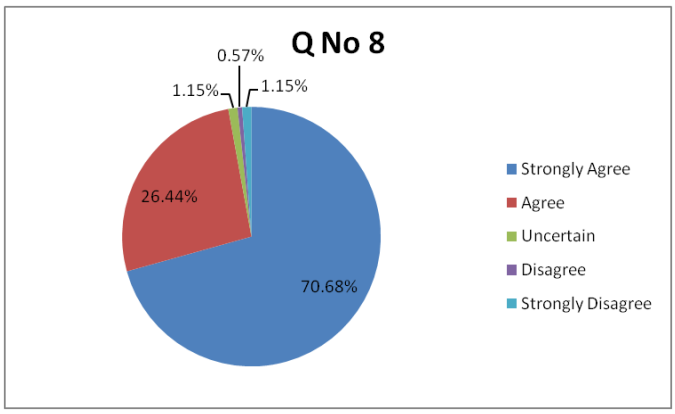


Fig 5.25: Patient responses to Q No 8 in percentage

This question covers the accessibility and convenience parameters as perceived by the patient clientele and questions the ease of access to specialist.

A total of 123 (70.68%) have responded with strongly agree and another 46 (26.44%) have agreed to the ease of access. Thus out of all respondents more than 97% have given a favourable response to the question and goes favourable to the medical care facility available to them.

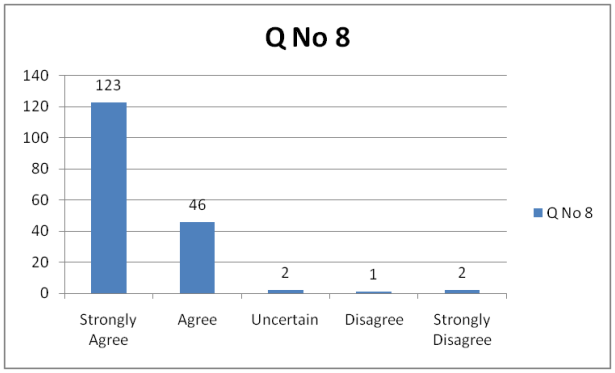


Fig 5.26: Patient responses to Q no 8 in numbers

Q No 9: Where I get medical care people have to wait too long to get emergency care

Strongly Agree	16	9.19%
Agree	7	4.02%
Uncertain	12	6.89%
Disagree	70	40.22%
Strongly Disagree	69	39.66%

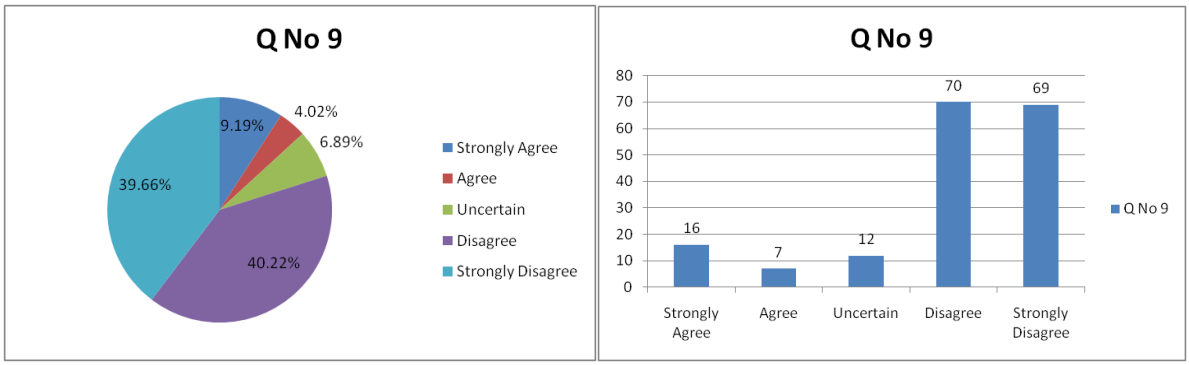


Fig 5.27: Patient responses to Q No 9 in percentages and numbers

This question too covers the accessibility and convenience parameters as perceived by the patient clientele and questions the waiting time for emergency care. This is a vital question in terms of the acute care facility of the hospital. Out of the total 174 respondents 69 (39.66%) have given a very favourable 'strongly disagree' response and 70 (40.22%) have given a favourable 'disagree' response.

A total of 16 (9.19%) have given a very unfavourable 'strongly agree' response; 7 (4.02%) have given an unfavourable response of 'agree' and 12 (6.89%) have remained 'uncertain' to the question. Thus overall 139 out of 174 accounting for 79.88% have given a favourable response.

Q No 16: I find it hard to get an appointment for medical care right away

Strongly Agree	1	0.57%
Agree	4	2.29%
Uncertain	6	3.44%
Disagree	85	48.85%
Strongly Disagree	78	44.82%

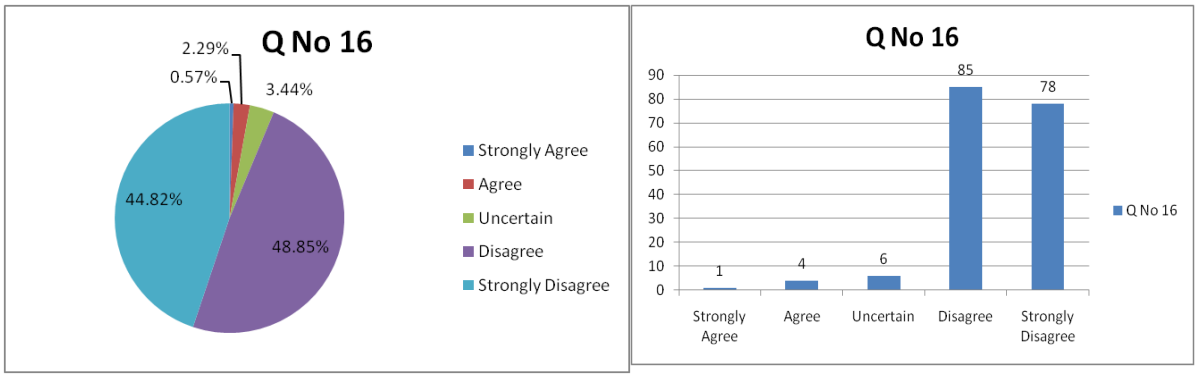


Fig 5.28: Patient responses to Q No 16

This question evaluates the 'access and convenience parameter' of the PSQ18 modified questionnaire and is worded as a negative statement for obtaining appropriate responses.

Out of the total 174 patient respondents 78 (44.82%) have given a very favourable 'strongly disagree' response and another 85(48.85 %) have given a favourable 'disagree' response.

Only one (0.57%) patient has given a very unfavourable 'strongly agree' response; 4 (2.29%) have given an unfavourable response of 'agree' and 6 (3.44%) have remained 'uncertain' to the question. Thus overall 163 out of 174 (93.67%) have given a favourable response in terms of appointment and access for medical care.

Q No 18: I feel I am able to get medical care whenever I need

Strongly Agree	106	60.92%
Agree	60	34.48%
Uncertain	5	2.87%
Disagree	2	1.15%
Strongly Disagree	1	0.57%

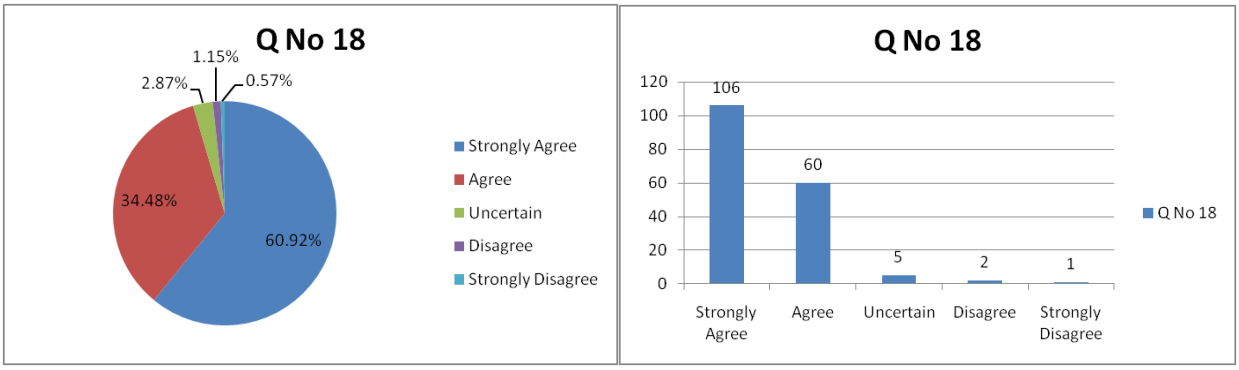


Fig 5.29: Patient responses to Q No 18

Along with previous question numbers 8, 9 and 16 this question also addresses the extremely important 'accessibility and convenience' parameter of the modified PSQ18 questionnaire.

Out of the 174 responses received, 106 (60.92%) have strongly agreed with the question and another 60 (34.48%) have agreed to it. Five patients have remained uncertain and the remaining three have given unfavourable responses.

Thus a total of 166 out of the total of 174 amounting to 95.4% have provided a favourable and positive response towards accessibility to medical care.

Chapter VI

RESULTS AND DISCUSSION OF STUDY

This study with the title of 'Impact of covid-19 pandemic on patient service delivery at a mixed covid military hospital' basically has the following three main components:

I. Challenges encountered by health care workers during the COVID-19 pandemic in terms of workplace, resource, societal and domestic issues.

II. Changes in hospital services availed by non-covid clientele during the pandemic at a mixed covid hospital in terms of reduction in patient numbers.

III. Perceived satisfaction level of existing hospital services at the current stage of the pandemic using modified standard questionnaire PSQ18

I. CHALLENGES ENCOUNTERED BY HCW DURING THE COVID-19 PANDEMIC- RESULTS AND DISCUSSION

Healthcare workers faced multiple challenges in the form of stressors related to their workplace, societal and domestic including financial issues during the pandemic years. However, most studies have given importance to the issues of mental health alone in terms of anxiety and depression among the health care workers. In our study we have focused on multiple concerns that include workplace stressors, societal and domestic issues as well administrative and resource related issues.

The questionnaire used as well as the responses recorded have been enumerated in Chapter IV of this study. The scoring was done by giving the highest score of 5 to the 'strongly agree' response and sequentially reduced by one till the 'strongly disagreed' response. The average /mean score as per each question is tabulated below Table 6.1

along with the averages between subgroups depending on their employment during the pandemic. The highest average scores are highlighted.

Table 6.1: Mean score for each question with averages of sub-groups HCW

Q No	Question	Mean Score 159	Nurs Staff (31)	MO (21)	Spl (66)	Super Spl (31)	Administrators (10)
1	I was fearful of catching an unintended infection from workplace	**3.574**	3.546	3.554	3.586	3.551	**3.700**
2	I felt alienated from my immediate family due to my work schedule and working in covid wards	**3.519**	3.511	3.416	3.535	3.537	**3.600**
3	My social interactions with my friends and relatives changed negatively due to the pandemic	**3.423**	**3.468**	3.426	3.433	3.429	3.200
4	I found it difficult to meet the essential household supplies for my family during the pandemic	**3.234**	3.270	3.158	3.242	3.211	**3.300**
5	I felt that the availability of PPEs, face masks and sanitizers was a source of stress for me in my work setting	**3.100**	3.149	3.000	**3.153**	3.136	2.700
6	I felt that the distribution of medicines for treating covid cases in my work setting was a source of stress for me	**2.943**	2.936	2.950	**3.006**	2.952	2.500
7	I feel that we faced shortage of isolation beds and oxygen supply for patients during most of the pandemic duration	**3.500**	3.482	3.426	3.541	**3.544**	3.300
8	Our preparedness towards infection control and changes made to the facility layout was a source of workplace stress for me	**3.214**	3.184	3.198	3.210	3.204	**3.400**
9	I feel my treating team was adequately trained and had high motivation levels	**4.031**	4.014	4.040	3.981	4.027	**4.400**
10	I feel that the frequent changes in the treatment guidelines as the pandemic evolved interfered with my management and was a source of professional stress to me	**3.459**	3.404	3.426	3.446	3.422	**3.900**
11	I felt stressed during breaking of bad news to patients relatives frequently	**3.649**	3.652	3.564	**3.682**	3.680	3.500
12	I feel that there was adequate administrative and managerial support and communication for the health care workers during the pandemic	**3.444**	3.433	3.426	3.376	3.401	**4.100**
13	I was very much concerned about the biomedical waste disposal and	**3.619**	3.603	3.564	3.637	3.605	**3.700**

	likely spread of infections and was stressed due to these factors						
14	I faced a certain degree of financial stress and uncertainty during the pandemic	**2.564**	2.546	2.554	2.580	2.578	2.500
15	I was physically stressed due to the extended work schedules of the pandemic	**3.783**	3.787	3.713	**3.809**	3.796	3.700
16	My team of healthcare workers were otherwise in good physical fitness shape	**3.863**	3.837	3.842	3.841	3.844	**4.200**
17	I feel that now I am better prepared for handling a similar situation in future	**4.198**	4.177	4.139	4.178	4.170	**4.600**
18	I feel that the society in general was indifferent and unsupportive of the health care workers during the pandemic	**3.612**	3.617	**3.673**	3.631	3.626	3.300

The Questions 6 and 14 have received less than the median score of 3 and the averages are not in congruity with the questions. Question No 14 pertains to financial hardships faced during the pandemic and since almost all the employees have been fully employed in the government sector there is no agreement with the question as a stress factor.

Question No 6 pertains to distribution of medicines (resource distribution /allocation) as a stress factor for which all groups are once again not in concordance. All other questions have been received a score more than 3 and was perceived as a stress factor.

Fig 6.1 depicts the average score of the healthcare workers survey questionnaire as per each response. Evaluation of each construct is discussed towards the end of this section.

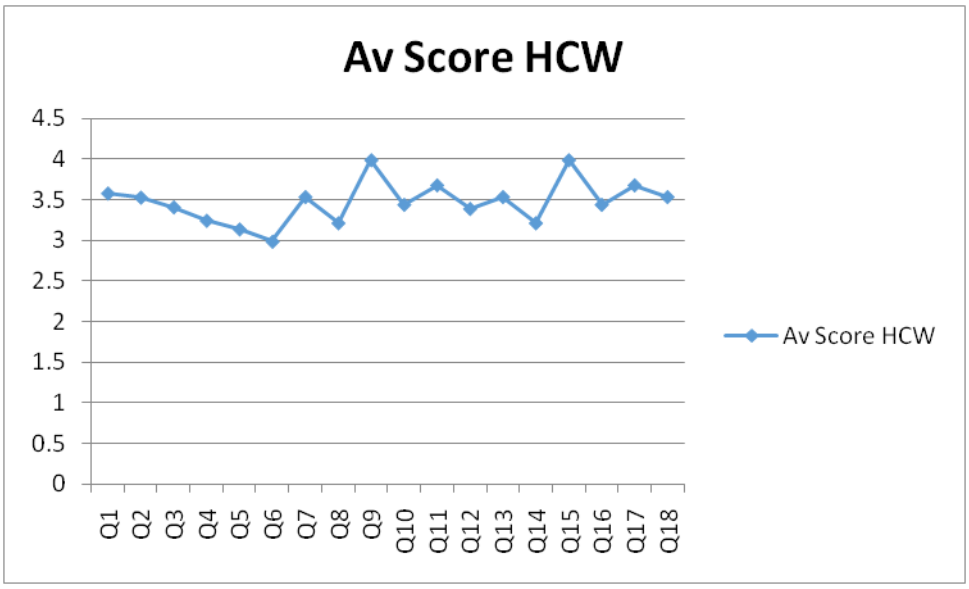


Fig 6.1: Average score for each HCW questionnaire response

The following Table 6.2 depicts the concordance or agreement of different sub-groups of nursing staff, medical officers and residents; specialist doctors and super specialists; hospital administrators for each of the questions.

Table 6.2: Subgroups most and least in agreement with questionnaire

Q No	Question	Mean Score n-159	Sub-Group most in agreement with the question	Sub-Group least in agreement with the question
1	I was fearful of catching an unintended infection from workplace	3.574	Hospital Administrators	Nursing staff
2	I felt alienated from my immediate family due to my work schedule and working in covid wards	3.519	Hospital Administrators	Medical offrs and residents
3	My social interactions with my friends and relatives changed negatively due to the pandemic	3.423	Nursing staff	Hospital Administrators
4	I found it difficult to meet the essential household supplies for my family during the pandemic	3.234	Hospital Administrators	Medical offrs and residents
5	I felt that the availability of PPEs, face masks and sanitizers was a source of	3.100	Specialists	Hospital Administrators

	stress for me in my work setting			
6	I felt that the distribution of medicines for treating covid cases in my work setting was a source of stress for me	2.943	Score less than median 3, no group in concordance	
7	I feel that we faced shortage of isolation beds and oxygen supply for patients during most of the pandemic duration	3.500	Super-specialists	Hospital Administrators
8	Our preparedness towards infection control and changes made to the facility layout was a source of workplace stress for me	3.214	Hospital Administrators	Medical offrs and residents
9	I feel my treating team was adequately trained and had high motivation levels	4.031	Hospital Administrators	Specialists
10	I feel that the frequent changes in the treatment guidelines as the pandemic evolved interfered with my management and was a source of professional stress to me	3.459	Specialists	Nursing staff
11	I felt stressed during breaking of bad news to patients relatives frequently	3.649	Specialists	Medical offrs and residents
12	I feel that there was adequate administrative and managerial support and communication for the health care workers during the pandemic	3.444	Hospital Administrators	Specialists
13	I was very much concerned about the biomedical waste disposal and likely spread of infections and was stressed due to these factors	3.619	Hospital Administrators	Medical offrs and residents
14	I faced a certain degree of financial stress and uncertainty during the pandemic	2.564	Score less than median 3, no group in concordance.	
15	I was physically stressed due to the extended work schedules of the pandemic	3.783	Specialists	Hospital Administrators
16	My team of healthcare workers were otherwise in good physical fitness shape	3.863	Hospital Administrators	Nursing staff
17	I feel that now I am better prepared for handling a similar situation in future	4.198	Hospital Administrators	Medical offrs and residents
18	I feel that the society in general was indifferent and unsupportive of the health care workers during the pandemic	3.612	Medical offrs and residents	Nursing staff

Hospital administrators were most fearful of the infection; felt most socially isolated from family and difficult adaptation; had the most difficulty with essential services; were most concerned with biomedical waste disposal (for obvious reasons of responsibility). However they also felt that their teams were in good shape to fight the pandemic with good health and training and motivation levels; felt better trained and prepared for similar eventuality in future; and agreed with the fact that there was adequate administrative support and managerial efforts with good communication.

The nursing officers and staff were least fearful of the infection; felt more socially isolated from other than family; and in least agreement with the statement that society in general was indifferent and unsupportive of the health care workers during the pandemic!

The specialists doctors and super-specialist were most worried about availability of hospital resources in terms of beds, PPE and oxygen distribution. They were also the most stressed about frequently changing guidelines of treatment and the need to adapt to those; breaking of bad news to the patients and relatives and felt most physically stressed due to the extended working hours. They also felt that their treating teams could have been better trained.

The medical officers and PG residents were most in agreement with the statement that society in general was indifferent and unsupportive of the health care workers during the pandemic; and were least in agreement as being better prepared for a similar situation in future.

ANALYSIS OF QUANTITATIVE DATA

The scale used was the Likert scale and methodology has been described in Chapter II and Chapter IV. Likert scale from 1(strongly disagree) to 5 (strongly agree) was used for the survey.

Table 6.3: Constructs used

NO	CONSTRUCTS	RELATED QUESTIONS NO
C-1	**FEAR** of disease or transmission	1
C-2	Social or community relationships & **ADAPTIVENESS**	2,3,18
C-3	**ESSENTIAL** services availability	4,14
C-4	**RESOURCE** availability,adequacy and allotment	5,6,7
C-5	Changing **GUIDELINES**	10
C-6	**ADMINI**STRATIVE support, training	8,9,12,17
C-7	**BIOMEDICAL waste**	13
C-8	Physical/mental **FITNESS**	11,15,16

FACTOR ANALYSIS

A basic preliminary factor analysis of the 18 variables were carried out with the following inferences

1. KMO and Bartletts test: Kaiser-Meyer-Olkin measure of adequacy of sampling was done with a result of 0.802 (Value more than 0.6 is considered adequate sampling)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.802**
Bartlett's Test of Sphericity	Approx. Chi-Square	**788.881**
	df	**153**
	Sig.	**.000**

Significance was less than 0.05 and a relatively high Chi-square test.

2. Total Variance explained at Table 6.4 below

Table 6.4: Total Variance Explained

Variable Q	Initial Eigen Values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**4.699**	26.105	26.105	**4.699**	26.105	26.105
2	**2.374**	13.191	39.296	**2.374**	13.191	39.296
3	**1.248**	6.933	46.229	**1.248**	6.933	46.229
4	**1.154**	6.409	52.638	**1.154**	6.409	52.638
5	**1.004**	5.575	58.214	**1.004**	5.575	58.214
6	.961	5.337	63.551			
7	.925	5.140	68.691			
8	.794	4.413	73.104			
9	.701	3.896	77.000			
10	.659	3.659	80.659			
11	.582	3.233	83.892			
12	.536	2.977	86.869			
13	.492	2.736	89.604			
14	.467	2.593	92.197			
15	.430	2.387	94.584			
16	.373	2.075	96.659			
17	.330	1.831	98.490			
18	.272	1.510	100.000			

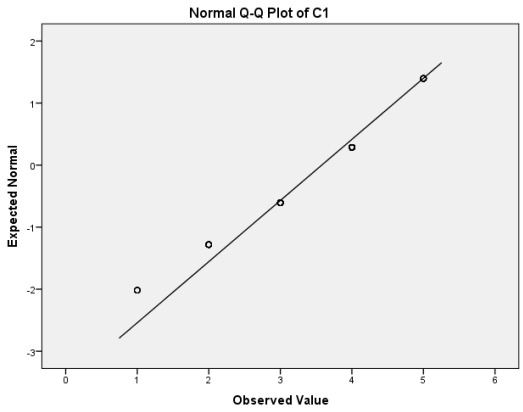
Extraction Method: Principal Component Analysis.

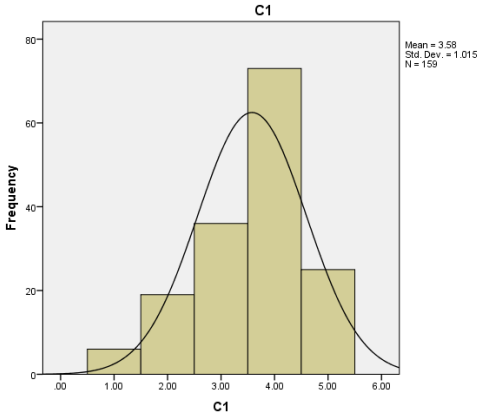
This indicates that even use of five constructs out of the variables with Eigen value greater than one gives a cumulative variance of 58%. Anything more than 60% is considered good using conventional statistics. A reading of 58% is close to the mark and especially so with the next two variables having close Eigen values. Many research papers accept a lower value of cumulative variance as significant. (Maskey, Fei J & Nguyen 2018). This study has used eight constructs for the 18 variables studied.

3. Tests for Normalcy

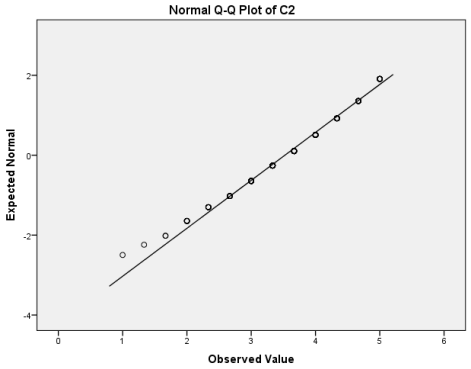
The responses for each of the constructs were tested for normalcy using the Q-Q plot and histogram and the results are as given below:

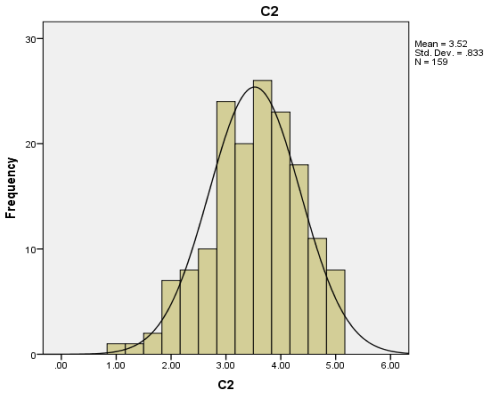
Construct-1: Fear of disease or transmission: The data as given below is normally distributed.



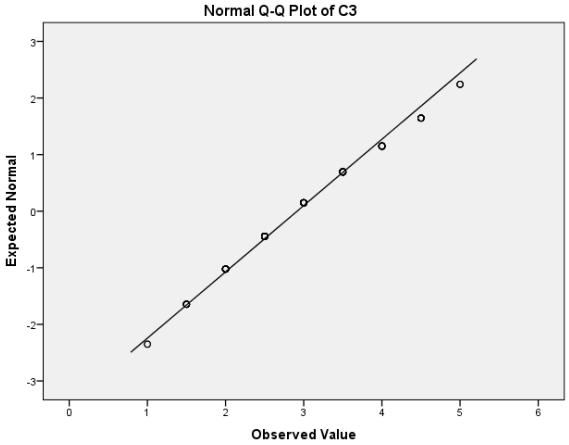


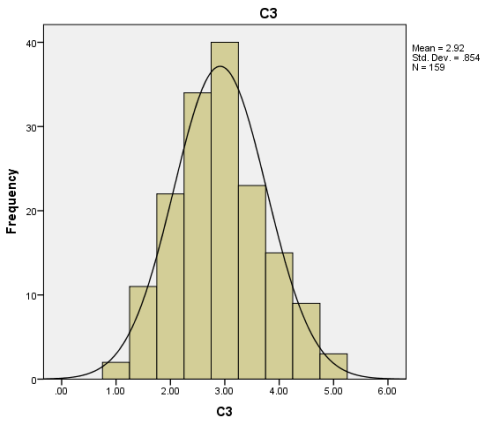
Construct -2: Social or community relationships & adaptiveness: The Normal Q-Q bubble plot for this construct with the data distribution is shown below. The data is normally distributed.



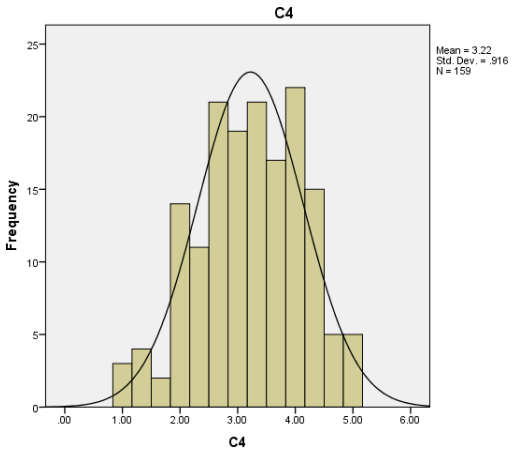


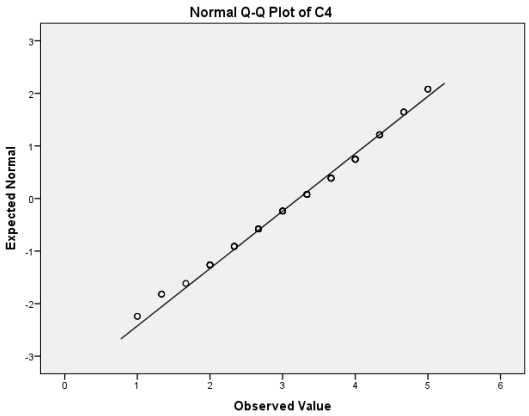
Construct-3: Essential services availability as a factor for stress among HCW: The Normal Q-Q bubble plot for this construct with the data distribution is shown below. The data is normally distributed.



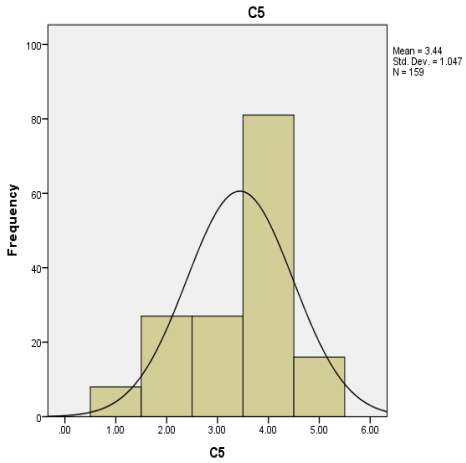


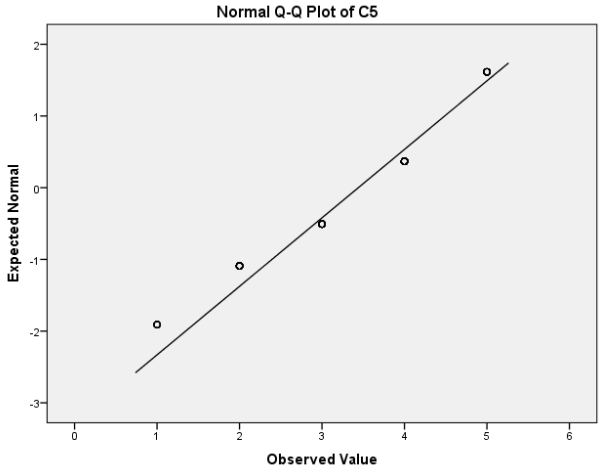
Construct-4: Resource availability, adequacy and allotment: The Normal Q-Q bubble plot for this construct with the data distribution is shown below. The data is normally distributed.



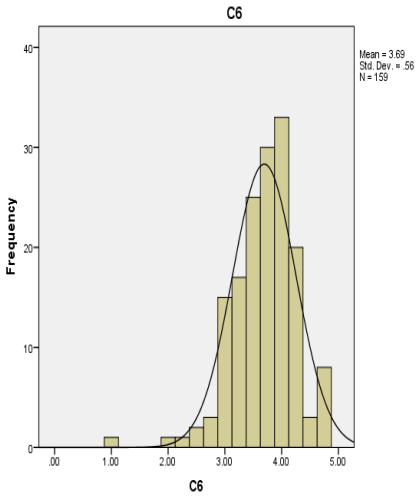


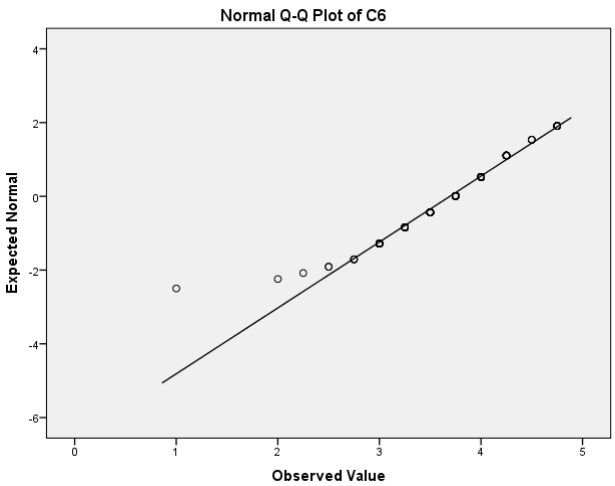
Construct-5: Frequently Changing **Guidelines: Normal distribution seen**



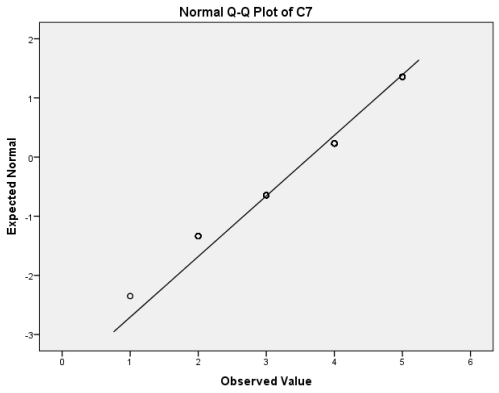


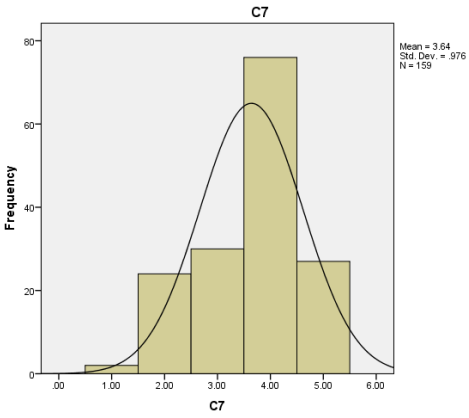
Construct-6: Administrative support and training factors: The Q-Q plot and histogram show a normal distribution.



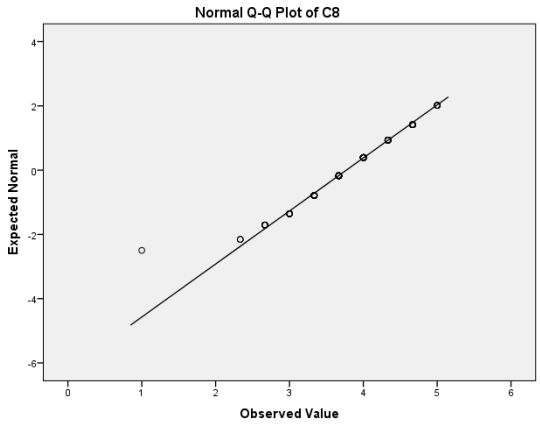


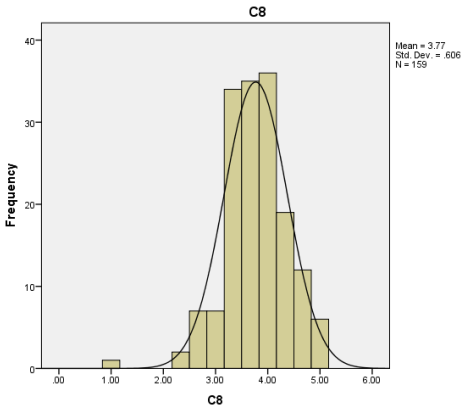
Construct-7: Biomedical waste disposal as a stress factor: The QQ plot and histogram show a normal distribution for the construct.





Construct-8: Physical and Mental fitness of the individual and the team as a stress factor: The distribution is a normal one.





4. Tests of Reliability

The sample as a whole (all variables) and the eight constructs were subjected to tests of reliability as shown below

Case Processing Summary

		N	%
Cases	Valid	159	100.0
	Excluded[a]	0	.0
	Total	159	100.0

a. List-wise deletion based on all variables in the procedure.

Reliability Statistics for Variables Q1-Q18

Cronbach's Alpha	N of Items
0.787	18

Reliability Statistics for Constructs C1-C8

Cronbach's Alpha	N of Items
0.740	8

A Cronhbach's Alpha value (0.787 and 0.740) being more than 0.60 reflects good reliability of the data and scale.

5. Descriptive Statistics

The descriptive statistics for each construct is as given in Table 6.5 with inference.

Table 6.5: Descriptive statistics for HCW survey

		Statistic	Std. Error	Remarks
C1: Fear of disease	Mean	3.5786	.08049	Negative skewness and Kurtosis. Mean is in favour of perception of fear as a stress factor
	Median	4.0000		
	Variance	1.030		
	Std. Deviation	1.01497		
	Skewness	-.658	.192	
	Kurtosis	-.012	.383	
C2: Social relations and adaptiveness	Mean	3.5241	.06607	Negative skewness and negative kurtosis. Most respondents feel social relations and adaptiveness as a source of stress
	Median	3.6667		
	Variance	.694		
	Std. Deviation	.83309		
	Skewness	-.370	.192	
	Kurtosis	-.135	.383	
C3: Essential services disruption	Mean	2.9151	.06769	Negative skewness and Kurtosis. Most respondents did not agree with essential services disruption
	Median	3.0000		
	Variance	.729		
	Std. Deviation	.85352		
	Skewness	.230	.192	
	Kurtosis	-.278	.383	
C4: **A**vailability, adequacy and allotment of resources as a stress factor	Mean	3.2201	.07266	Negative skewness and negative kurtosis. Respondents marginally agree
	Median	3.3333		
	Variance	.839		
	Std. Deviation	.91620		

	Skewness	-.234	.192	with this a sa stress factor with mean at 3.2
	Kurtosis	-.455	.383	
C5: Frequently Changing Guidelines	Mean	3.4403	.08303	Negative skewness and kurtosis. Respondents agree with frequently changing guidelines construct as a stress factor
	Median	4.0000		
	Variance	1.096		
	Std. Deviation	1.04694		
	Skewness	-.694	.192	
	Kurtosis	-.303	.383	
C6: Administrative support and Training issues	Mean	3.6934	.04438	Negative skewness but with a positive kurtosis. Most respondents agree with this construct as a stress factor source.
	Median	3.7500		
	Variance	.313		
	Std. Deviation	.55967		
	Skewness	-.898	.192	
	Kurtosis	2.921	.383	
C7: Biomedical waste disposal as a stress factor	Mean	3.6415	.07742	Negative skewness and kurtosis. Most respondents found this as a source of stress. Mean of 3.64
	Median	4.0000		
	Variance	.953		
	Std. Deviation	.97619		
	Skewness	-.549	.192	
	Kurtosis	-.380	.383	
C8: Physical and mental fitness	Mean	3.7694	.04804	Negative skewness and positive kurtosis. Most respondents agree with this construct of fitness as a source of stress.
	Median	3.6667		
	Variance	.367		
	Std. Deviation	.60582		
	Skewness	-.545	.192	
	Kurtosis	2.063	.383	

The questions in the HCW questionnaire were divided into various Constructs and matching these questions as shown below in Table 6.3. The table depicts the average score for these Constructs. All scores are more than three i. e. towards the 'agree' response.

Table 6.6: Ranking of Constructs based on mean scores

	Constructs	Ques No	Mean Score	**Ranking**
C-1	Fear of disease or transmission	1	3.70	**1**
C-2	Social or community relationships and adaptiveness	2,3,18	3.58	**2**
C-3	Essential services availability	4,14	3.57	**3**
C-4	Resource availability, adequacy and allotment	5,6,7	3.54	**4**
C-5	Frequently changing guidelines	10	3.49	**5**
C-6	Administrative support, training	8,9,12,17	3.44	**6**
C-7	Biomedical waste	13	3.23	**7**
C-8	Physical/mental fitness	11,15,16	3.22	**8**

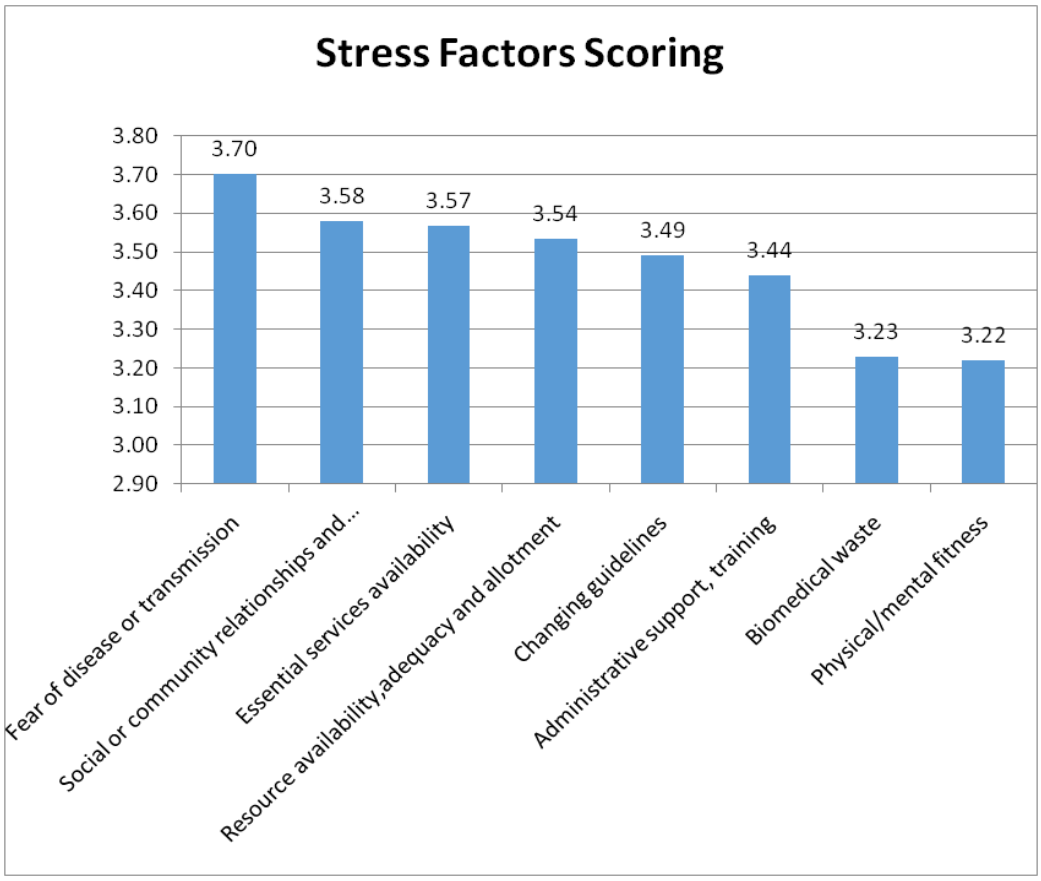


Fig 6.2: Stress factors arranged as per ranking

Thus as per this study the highest ranked stress related issue continues to be personal and societal in terms of fear of disease and transmission followed by societal and community relationships and support. The factors ranked 3 to 7 are all related to workplace stress and are multi-factorial though lesser than fear of disease and societal issues. Workplace stressors include resource allocation, communication, administrative support as well as adaptation to changing guidelines of covid management and biomedical waste disposal issue. The last is the physical and mental health of the individual as well as the team.

Analysis of variance in data between HCW groups

Since the questionnaire was given to all stakeholders among healthcare workers, variance in their feedback for each construct has been looked into using ANOVA test as given below.

Table 6.7:ANOVA for HCW questionnaire study

Constructs & Groups		Sum of Squares	df	Mean Square	F	Sig.
C1	Between Groups	5.555	4	1.389	1.360	.250
	Within Groups	157.212	154	1.021		
	Total	162.767	158			
C2	Between Groups	3.310	4	.828	1.198	.314
	Within Groups	106.348	154	.691		
	Total	109.658	158			
C3	Between Groups	.968	4	.242	.326	.860
	Within Groups	114.136	154	.741		
	Total	115.104	158			
C4	Between Groups	1.201	4	.300	.352	.842
	Within Groups	131.428	154	.853		
	Total	132.629	158			
C5	Between Groups	.912	4	.228	.204	.936
	Within Groups	172.270	154	1.119		
	Total	173.182	158			
C6	Between Groups	.636	4	.159	.501	.735
	Within Groups	48.855	154	.317		
	Total	49.491	158			
C7	Between Groups	2.003	4	.501	.519	.722
	Within Groups	148.564	154	.965		
	Total	150.566	158			
C8	Between Groups	1.123	4	.281	.760	.553
	Within Groups	56.866	154	.369		
	Total	57.989	158			

This one-way ANOVA test has shown that the differences in responses/answers between the various groups of HCW respondents are all higher than 0.05 and therefore not statistically significant.

CONSTRUCT SCORES AS PER JOB-PROFILES AMD GENDER DISTRIBUTION

The mean scores of the eight constructs of HCW questionnaire are depicted as per job-profiles and gender distribution in the following paragraphs.

Construct-1: Fear of disease or transmission as stress factor (Fig 6.3)

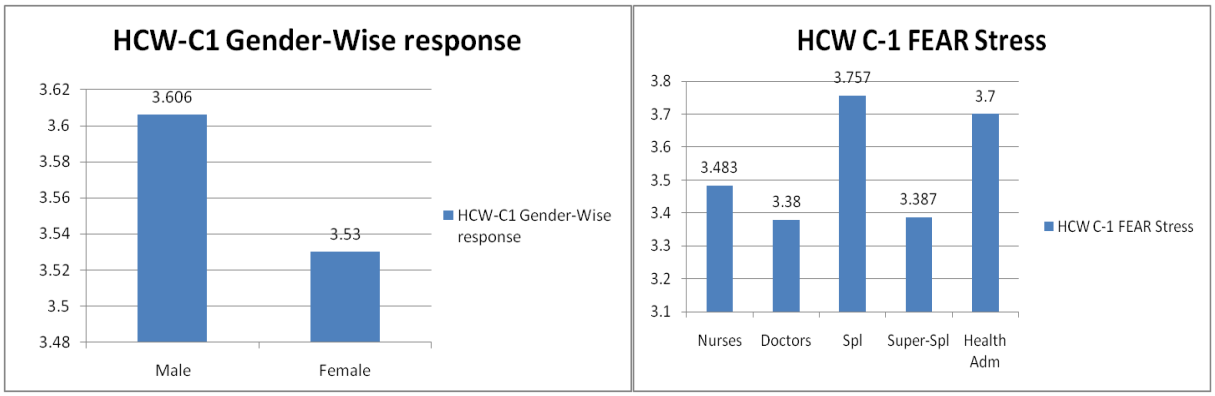


Fig 6.3: HCW Construct-1 mean scores across gender and job-profile

Job profile wise the fear factor was **highest with the specialists** as they were perhaps exposed higher to the pandemic cases.

Gender-wise the **fear factor was less in females** than males in all categories. On running crosstabs too the p value of 0.009 showed significant association.

Construct-2: Society and Adaptability as stress factors (Fig 6.4)

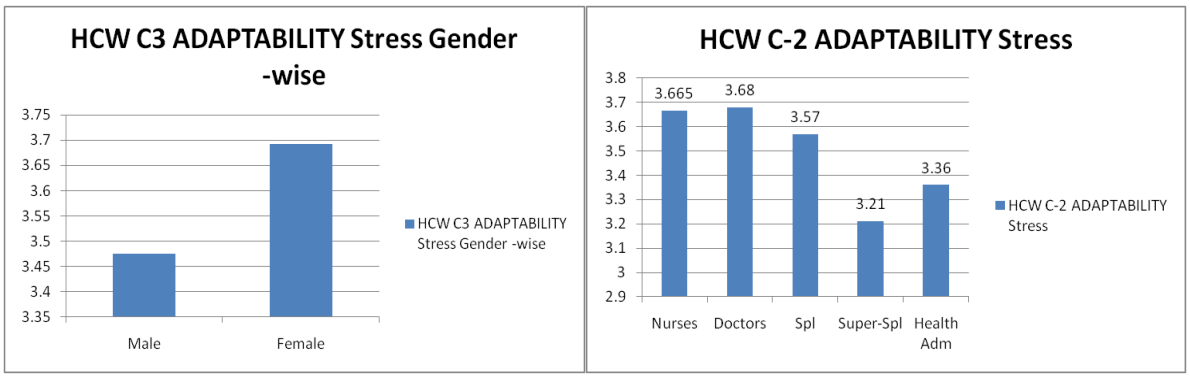


Fig 6.4: HCW Construct-2 mean scores across gender and job-profile

Social adaptability stress was highest among MBBS doctors. Gender wise females reported higher social adaptability stress.

Construct-3: Essential supplies availability as a stress factor (Fig 6.5)

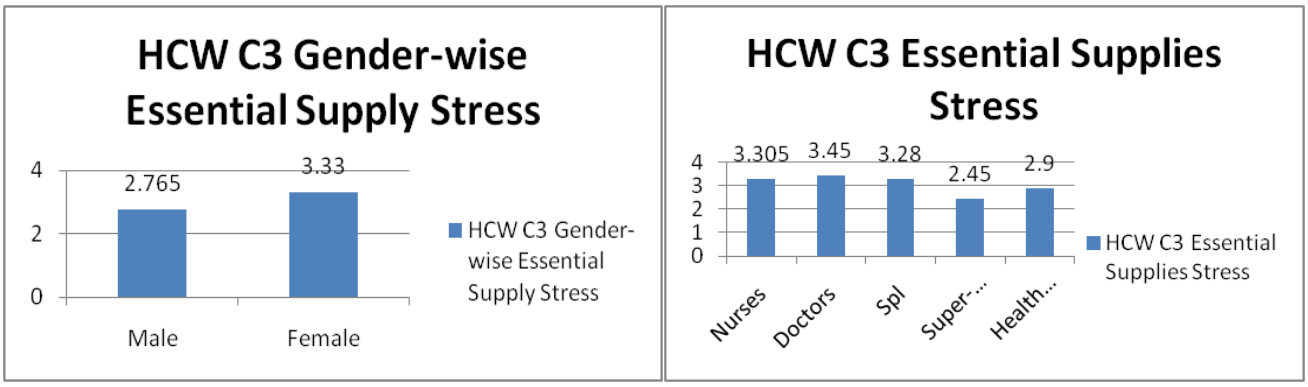


Fig 6.5: HCW Construct-3 mean scores across gender and job-profile

MBBS doctors and residents reported maximum stress due to supply constraints of essentials. Gender wise female participants reported higher degree of stress due to essentials supply. The p value of 0.019 was significant for gender.

Construct-4: Resource allocation adequacy and availability as a stress factor (Fig 6.6)

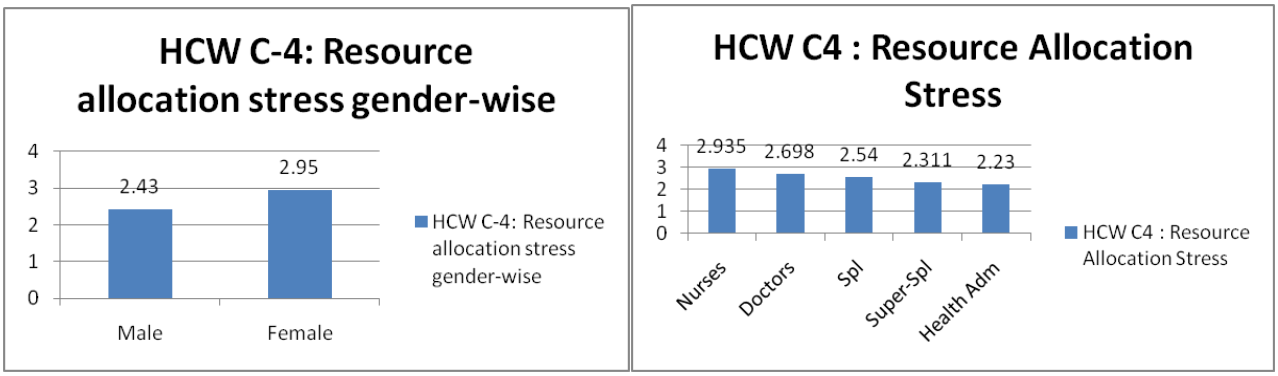


Fig 6.6. HCW Construct-4 mean scores across gender and job-profile

Stress due to resource allocation, adequacy and availability scored below 3 across gender (p value 0.030) and job-profiles (p value 0.019). Not a significant cause of stress as reported.

Construct-5: Frequently changing guidelines as a stress factor (Fig 6.7)

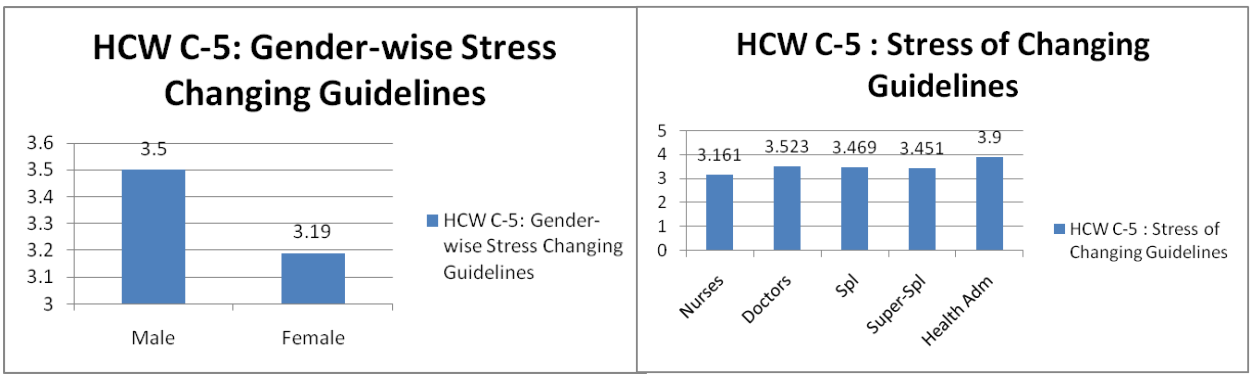


Fig 6.7: HCW Construct-5 mean scores across gender and job-profile

Frequently changing guidelines were a source of stress maximum to health administrators and found statistically significant (p value 0.043). Gender –wise the males were more stressed due to this issue and found significant statistically too (p value 0.022).

Construct-6: Administrative support and training issues as stress factor (Fig 6.8)

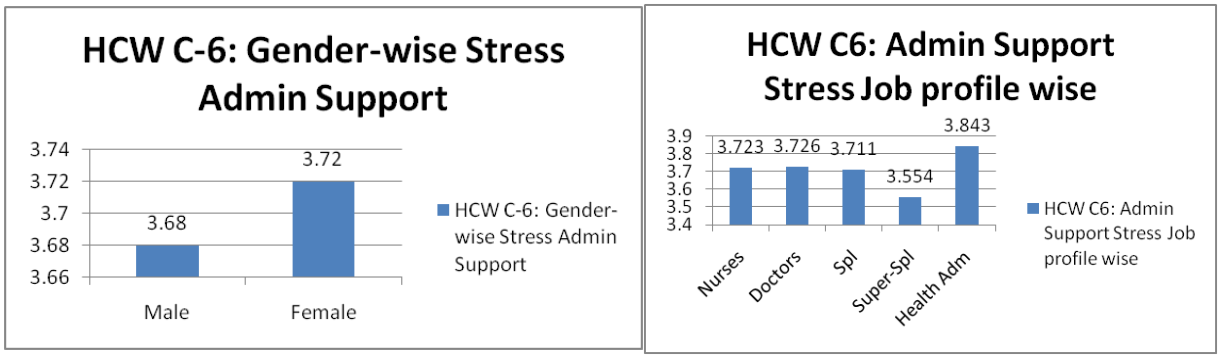


Fig 6.8: HCW Construct-6 mean scores across gender and job-profile

Female healthcare workers and health administrators reported higher degree of stress as responded to questions of this construct.

Construct -7: Biomedical waste disposal as a stress factor (Fig 6.9)

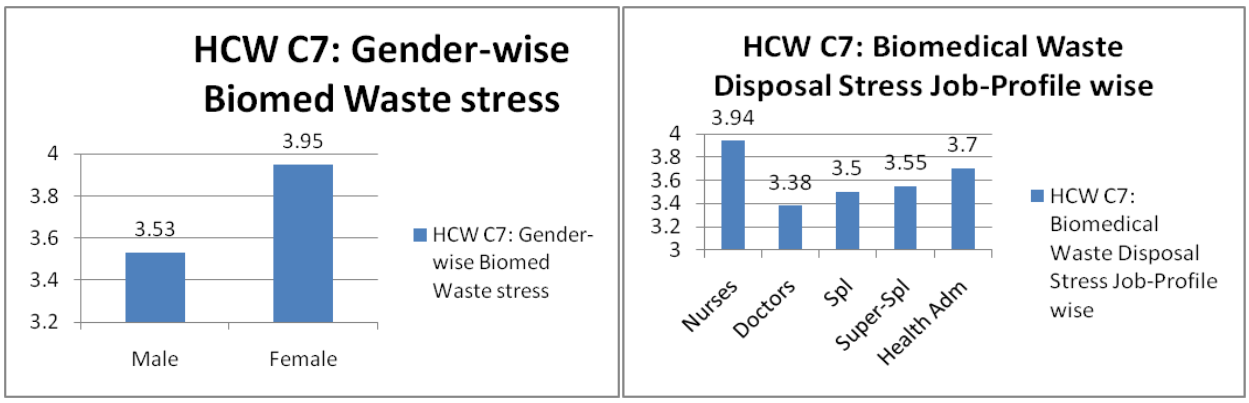


Fig 6.9: HCW Construct-7 mean scores across gender and job-profile.

Nurses reported the maximum stress due to biomedical waste disposal. Likewise females reported more stress levels due to this than males (p value 0.007)

Construct-8: Physical and mental fitness as a source of stress (Fig 6.10)

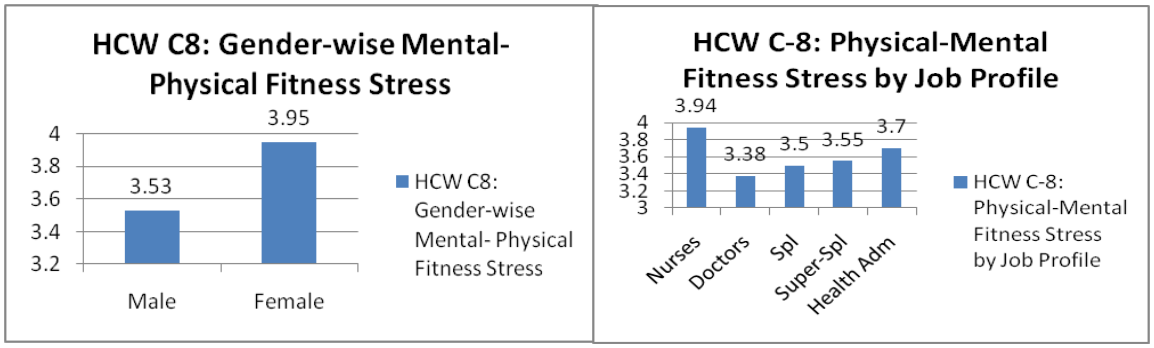


Fig 6.10: HCW Construct-8 mean scores across gender and job-profile

Nursing staff and female health workers in general perceived higher stress from mental and physical issue surrounding them than male healthcare workers. Statistically not significant though.

The following table (Table 6.8) depicts the p-values obtained on running crosstabs on SPSS software across age, gender and job profiles.

Table 6.8. Correlation across various constructs of HCW

Description of Construct	Construct	Correlation values on crosstab			
		Age	Gender-wise	Job profile	Experience
Fear	**C1**	0.623	**0.009**	0.083	0.901
Adaptability	C2	0.451	0.378	0.315	0.113
Essentials	**C3**	0.755	**0.019**	**0.019**	0.246
Resource alln	**C4**	0.929	**0.03**	0.367	0.068
Ch Guidelines	**C5**	0.605	**0.022**	**0.043**	0.583
Admin support	C6	0.954	0.904	0.668	0.811
Biomed waste	**C7**	0.742	**0.007**	0.112	0.512
Fitness Phy Men	C8	0.486	0.311	0.341	0.677

The highlighted columns indicate p values less than 0.05 showing significance. These are seen in gender and job profile traits.

The mean scores of all constructs created in this questionnaire have been above 3 meaning concordance with the various stress factors enquired through the questionnaire. Fear as a stress factor has been addressed by multiple studies along with the coping skills and mental well-being of health care workers. (Guo et al 2021; Lee A et al Mar 2020 ;Melvin C et al 2020). Almost all of them have stressed on the mental health status of the healthcare worker and the need for detecting depression and addressing them medically. These studies have focused on the frontline HCW especially the anesthesiologists and

infections and critical care specialists with high rates of mental stress from fear of the unknown and fear of transmitting the disease. In our study too fear of the disease and that of transmission has ranked highest with an overall mean of 3.7. However we found that fear as a major stress factor was higher in the male healthcare workers than the female workers (mean score of 3.60 males vs 3.53 for females) especially nurses and this was statistically significant (p - 0.009). We did not come across any quantitative study for comparison.

A few of the authors have addressed more than just the mental health and probed possible causes of social stressors and resource distribution adequacy and availability as a likely issue too. An Indonesian study (Smith Catherine 2020) discusses the structural vulnerability of healthcare workers during COVID-19 in the social context of risk and the equitable distribution of resources. Studies from UK (Hoernke et al 2021) have focused on the lack of availability of PPE and such other resource constraints faced by health care workers—published in BMJ Open as late as Sep 2021. It is thus important to recognize social stress factors and resource allotment and adequacy related factors as important stressors too. However in our study resource allocation and adequacy has not been responded to as a strong factor probably because of the military hospitals that are centrally funded with adequate resources. The correlation is statistically significant too. In this aspect our findings are in contrast to the findings of most studies on resource allocation. The same is true of financial stress as not being a major factor in government hospitals relatively.

However the social factors and adaptability as Construct-2 has scored a mean of 3.58. Across gender this stress has been higher among women and young doctors.

Resource availability, its allocation as well as adequacy also depends on the leadership in the field of medicine as well as the national leadership which ensures an equitable distribution during a pandemic to the extent possible. This has a great impact not only on the populace but also the psychological health of frontline nurses and care givers at all levels as brought out by Fuqiang Z et al Jul 2020 in their cross-sectional study among nurses.

Our study has addressed administrative support and training issues as a stress factor which has not been seen in these terms in any other study. 'Perceived managerial ineffectiveness' has been addressed in a small Indian study from Kolkata during the early months of pandemic (Sengupta et al 2020) as a cause of stress. Similarly the study states '*the current challenges are due to excessive work pressure and coordination laxities at workplaces. The respondents faced issues with altered facility layout, lack of motivation and morale, management apathy and communication limitations that hospital management need to workout. The prime minister on behalf of the common Indian has also acknowledged the selfless services by the healthcare personnel'* (Sengupta et al 2020). Our study too has scored relatively above median of 3 on the administrative and training issues (construct-6) as stress factors. However they are much lower in ranking at sixth rank with a mean score of 3.44 and not statistically significant.

It is well known that there were significant challenges to disposal of biomedical waste in hospitals and prevention of contamination with general waste as well as meticulous observation of waste disinfection (Goswami et al 2021). Various studies have mentioned the challenges faced by society in general and hospitals in particular due to an increase in biomedical waste generated as a result of extensive use of PPE and other single use materials in hospitals coupled with delayed or disorganized collection and disposal services arising out of fear of the pandemic (Goswami et al 2021). In our study stress

arising out of biomedical waste disposal has ranked seventh out of eight on constructs. However the stress reported has been higher among female heath care workers and highest among nurses. This was probably because nurses are directly concerned with continuous patient care and therefore use and generate higher personnel protection equipments (PPE). This gender correlation was statistically significant in our study (p value -0.007). Across job profile the group most concerned with biomedical waste was that of the nurses.

During the current pandemic, shortages of essential food products and essentials were widely reported. To minimize the impacts of this problem and to ensure the supply of essential products, various strategies were carried out by the national leadership. Among them, ramping up production early by taking rapid decisions, to minimize shortfalls, are suggested in various studies (Chowdhury et al 2021). Inspite of these efforts essentials supply is perceived as a cause of stress and the same has been studied by our study too. In this study stress due to disruption or difficulty in managing essentials ranked third out of eight among constructs with a mean of 3.57. There was also higher scores among females that was found statistically significant. Mean score of 2.76 for males vs. 3.33 among females and p value of 0.019. Thus though our respondents did not report much stress due to resource allocation and adequacy in hospitals they have nevertheless scored high on the availability of essentials.

II. CHANGES IN HOSPITAL SERVICES FOR NON-COVID DURING THE PANDEMIC – RESULTS AND DISCUSSION

Missing or reduced non-covid clientele was an issue noted during the pandemic especially in the first year 2020. The frequent lockdowns and other restrictions to contain the spread of the pandemic lead to further decrease in the number of patients reaching a hospital. Since most of the attention was on the isolation wards and containment zones and other covid facilities, the non-covid patient had a difficult time to continue his treatment. This study has addressed this missing non-covid clientele from the hospitals during the pandemic years by comparing the change in numbers with the previous years.

The secondary data collected from a multispecialty zonal hospital in western India is presented in the previous Chapter V.

The pandemic years affected the OPDs as well as the inpatient work and surgeries in most specialties (Fig 6.11).

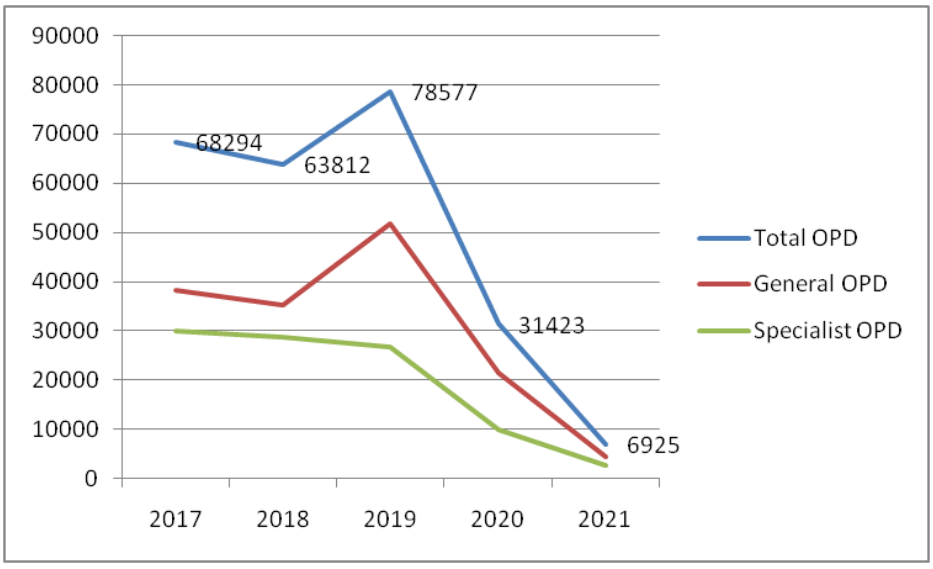


Fig 6.11 Trend of outpatient workload from 2017-2022

The reduction in total OPD was 44.74% for the year 2020 and 39.44% for the year 2021 estimated. The general OPD numbers had gone down by 51.69% for 2020 and 41.61% for the year 2021 estimated. Similarly the specialist OPDs have reduced by 34.56% for the year 2020 and 36.26% for the year 2021 estimated.

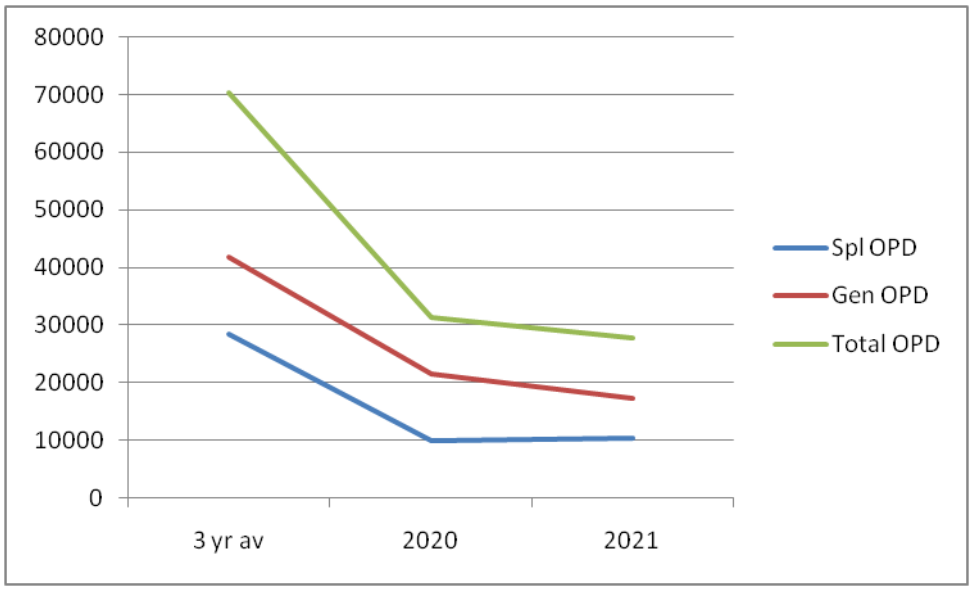


Fig 6.12: Trend of OPDs from a 3-year average

Emergencies and Hospital deaths: Various studies during the early part of the pandemic from Italy had suggested that the number of visits to the emergency room for urgent non-covid conditions have dropped significantly (SantiI L et al Dec2020). It was also mentioned in medical literature that the out of hospital mortality rates have increased along with the reduced numbers seen in the hospital emergency room. A study from Turkey have stated significant decrease in emergency admissions and an increase in out-of-hospital or home deaths (Nazli and Gunes July 2020).

However in our study of a 345 bedded mixed covid hospital showed a different picture. The emergency visits of non-covid cases did not show a decrease in relation to the number of patients reporting to the hospital outpatient departments. In fact there was a small

increase in the number of patients reporting to the emergency rooms from 112 the previous year to 128 in the year 2020. This assumes significance when viewed as a fraction of the total patients reporting to the hospital in that year to the emergency room i. e. from 0.2% to 0.4%.

Hospital mortality rates: All cause total in-hospital mortality rates however showed a significant increase from the existing numbers of the past three years. The non-covid hospital mortality did not show a significant change from previous years. There was also no increase in brought-in-dead patients or patients dying at home as compared to previous three years.

Fig 6.5 below depicts mortality from all causes covid as well as non-covid for the years 2020 and 2021. For the year 2020 ten deaths were due to non-covid and six deaths were due to covid related causes. For the year 2021 data shows a total of 34 deaths mostly from covid causes.

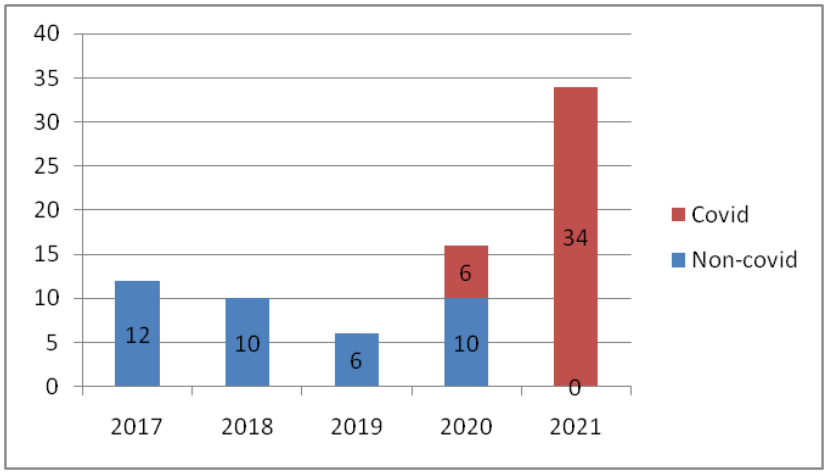


Fig 6.13: Hospital mortality (Covid and non-covid) from 2017 till 2020

The reduction in number of non-covid cases also extended to all specialties and surgeries. Major reductions in attendance are seen in the departments of general medicine (28.9%), ENT (28.57%), dermatology (23.15%0 and psychiatry (23.48%). The reduction in general medicine is explained by the patients collecting medicines from the general OPD or

perhaps procuring on their own due to various government schemes of reimbursement. Similarly reduction in dermatology or skin OPD is explained by the fact that patients avoided hospitals except where necessary in view of covid cases being concentrated more in health care setups than in community. An increase in adoption of video tele-consultation also may have contributed to the reduced numbers in these specialities. Various studies have shown an acceptable satisfaction levels by video-consultation in departments of ophthalmology (Gerbutavicius R et al 2021).

ENT surgeries being high risk contact surgeries were reduced during the period of the pandemic to a bare minimum in the presence of guidelines of safety and hence the numbers of cases are grossly reduced in these departments. Elective radiology examinations and elective surgeries for eye department were postponed due to the lockdown as well as regulations to avoid non-essential surgeries. This resulted in the number of patients being less. Contrary to popular belief no increase in psychiatric emergencies were observed. There was least reduction in the dept of obstetrics and gynaecology.

Elective surgeries of eye dept (37.35%), ENT dept as well as routine radiological examinations (28.3%) were drastically reduced.

Thus it would be fair to arrive at an absence of upto 34% to 44% % non-covid cases in the OPDs (general and specialist) and around 25% plus in most of the specialist centres.

We did not come across any Indian study that has quantitatively analysed the fraction of missing non-covid clientele. Mistry Lalit (Feb 2021) in their article ‘India’s healthcare sector transformation in the post-covid era--Mantra-Perspectives from KPMG in India’ have stated that the operating margins of private and corporate hospitals fell by as much as 40 percent during the pandemic.

A study from Turkey have stated significant decrease in emergency admissions and an increase in out-of-hospital or home deaths *Measures taken to prevent the spread of Covid-19 infection have caused a significant drop in emergency service admissions. We are of the opinion that this will lead to an increase in deaths occurring at home, and we will soon encounter patients with worse prognosis and overcrowded emergency services* (Nazli and Gunes July 2020). However this study did not find a decrease in emergency admissions or an increase in non-covid mortality.

Birkmeyer JD et al (2020) in their study titled 'The impact of the COVID-19 pandemic on hospital admissions in the United States: study examines trends in US hospital admissions during the COVID-19 pandemic' have brought out a detailed reduction in non-covid cases in that nation during the first year of the pandemic. They have termed 'puzzling' the fact that there was an unexplained reduction in acute cardiac infarctions and strokes. Overall there has been a reduction above 34% for all non-covid cases in US hospitals. Volumes fell in part because hospitals purposefully curtailed elective surgery and other noncritical medical services. But hospitals have also reported puzzling declines in admissions for acute medical illness, including stroke and acute myocardial infarction!

These authors have hypothesized that given the uncertainty of the disease and the public anxiety coupled with general restrictions of travel and social distancing, the average patient with an acute illness avoided the hospital for fear of contagion and uncertainty regarding hospital services access. Hospitals experiencing minimal impact of covid cases in the US recorded a decline of 39.5% and those with a higher impact of covid cases recorded a decline of 50 percent (Birkmeyer et al 2020). This is comparable to our results of decline between 34 to 44 percent across various departments. However our study did not find an increase of in-hospital non-covid mortality rates as reported by Birkmeyer and team in US.

III. PATIENT SATISFACTION FEEDBACK AT THE PRESENT STAGE – RESULTS AND DISCUSSION

Healthcare service delivery was interrupted during the pandemic and all efforts have been made to restore these services especially to non-covid elective clientele. With the second wave receding and no significant increase in mortality or CFR (case fatality rate) and the availability of vaccines that can prevent serious disease to a large extent it was important to document how the patient felt about the return of service delivery in the hospitals.

This study was carried out using the modified Short Form Patient Satisfaction Questionnaire PSQ-18. The questionnaire is a well established and standardised questionnaire used in the field of medicine to assess patient satisfaction in hospital settings. The PSQ18 was modified by two questions as discussed in the previous Chapter V.

The standard Short Form PSQ18 contains 18 questions covering seven dimensions or constructs for satisfaction from medical care namely **general satisfaction; technical quality; interpersonal matter; communication; time spent with doctor; financial aspects and accessibility and convenience.**

Table 6.9: Mean group score of each question PSQ

No	Question	Mean score
1	My doctors are good at explaining the reason for my tests	4.74
2	I think my doctor's office has everything needed to provide complete medical care	4.73
3	The medical care I have been receiving is just about perfect	4.72
4	Sometimes doctors make me wonder if their diagnosis is correct	1.75
5	**I feel adequate use of face-mask and social**	4.76

	distancing is being maintained at the facility	
6	When I go for medical care they are careful to check for everything when treating and examining me	4.68
7	**I feel adequate hand-hygiene and other covid precautions by staff are in place at this hospital**	4.78
8	I have easy access to medical specialists I need	4.65
9	Where I get medical care people have to wait too long for emergency treatment	3.97
10	Doctors act too impersonal and business-like towards me	4.76
11	My doctors treat me in a very friendly and courteous manner	4.68
12	Those who provide my medical care sometimes hurry too much when they treat me	4.78
13	Doctors sometimes ignore what I tell them	4.65
14	I have some doubts about the ability of the doctors who treat me	3.97
15	Doctors usually spend adequate time with me	4.76
16	I find it hard to get an appointment for medical care right away	4.68
17	I am dissatisfied with some things about the medical care I receive	4.78
18	I am able to get medical care whenever I need	4.65

The average score of each question is as shown in Table 6.4. A higher score relates to a better quality of patient care from all aspects. All questions have crossed the median of 3 by a wide margin with the exception of Q No 4. This question pertains to the technical

quality of medical care. Though the questionnaire was given in Hindi and English to all patients so desirous, the author feels that it could be because of failure to understand and get the general import of the question. Since the question is taken directly from a standard questionnaire, no amendments were done other than for the finance related ones.

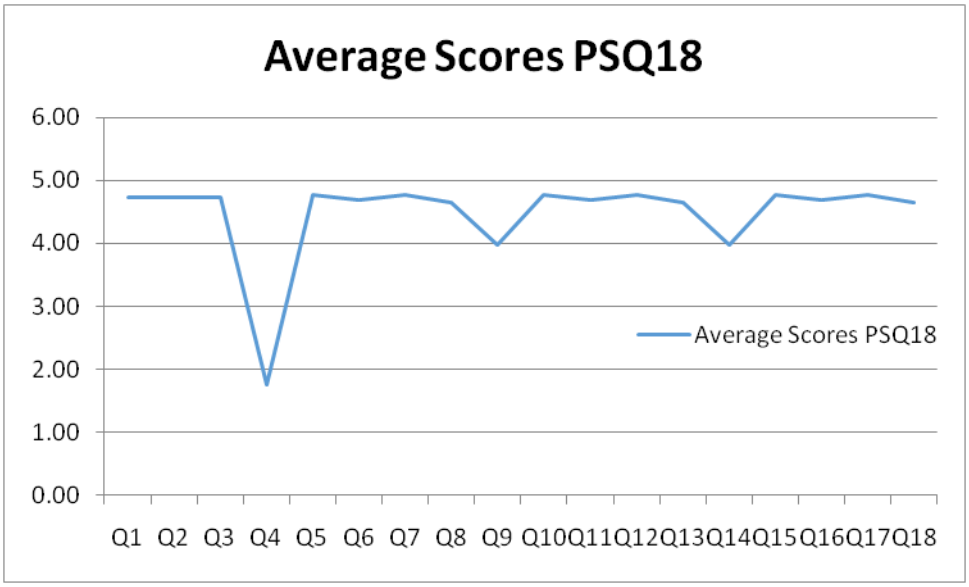


Fig 6.14: Average scores on PSQ18

Analysis of Quantitative Data

The scale used was the Likert scale and methodology has been described in Chapter II and Chapter V. Likert scale from 1(strongly disagree) to 5 (strongly agree) was used for the survey.

Table 6.10: Constructs for HCW questionnaire

	CONSTRUCTS	**RELATED QUESTIONS**
C-1	General Satisfaction	3,17
C-2	Technical Quality	2,4,6,14
C-3	Interpersonal Matter	10,11

C-4	Communication	1, 13
C-5	Covid Preventive Aspects	5,7
C-6	Time Spent With Doctor	12,15
C-7	Accessibility and Convenience	8,9,16,18

Factor Analysis: A basic preliminary factor analysis of the 18 variables were carried out with the following inferences

1. **KMO and Bartletts test**: Kaiser-Meyer-Olkin measure of adequacy of sampling was done with a result of 0.882 which is higher than a score of 0.6 considered as adequate sampling. Significance was less than 0.05 and a relatively high Chi-square test.

Table 6.11: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.882**
Bartlett's Test of Sphericity	**Approx. Chi-Square**	**2013.980**
	df	**153**
	Sig.	**.000**

2. Total Variance explained

Table 6.12: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.941	44.118	44.118	7.941	44.118	44.118	6.592
2	2.274	12.636	56.754	2.274	12.636	56.754	5.688
3	1.389	7.719	64.473	1.389	7.719	64.473	2.442
4	.910	5.054	69.527				
5	.840	4.667	74.194				
6	.695	3.863	78.057				
7	.580	3.225	81.282				
8	.561	3.117	84.399				
9	.453	2.518	86.917				
10	.426	2.368	89.285				
11	.396	2.202	91.487				
12	.325	1.807	93.294				
13	.282	1.565	94.859				
14	.247	1.372	96.231				
15	.225	1.251	97.483				
16	.190	1.056	98.538				
17	.151	.841	99.380				
18	.112	.620	100.000				

Extraction Method: Principal Component Analysis.

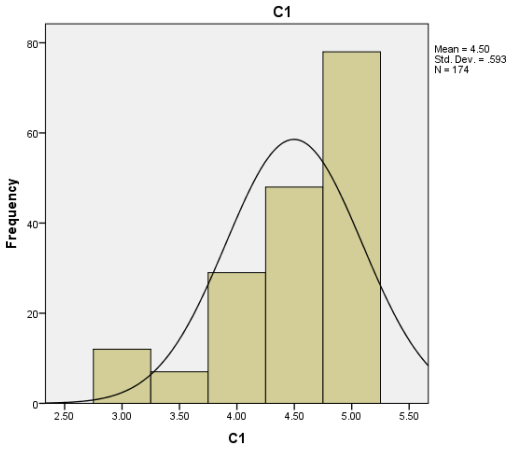
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

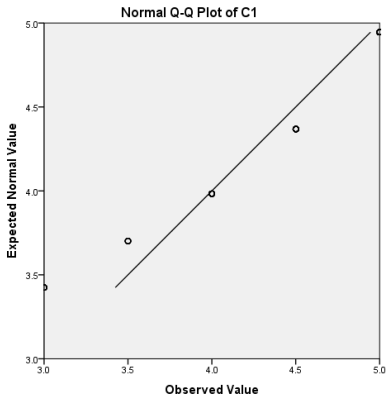
This indicates that the questions can be grouped into as low as three main constructs with Eigen value more than or equal to one and would give a cumulative variance of 64.47%. Anything more than 60% is considered good using conventional statistics. This study has used seven constructs for the 18 variables studied.

3. Tests for Normalcy

The responses for each of the constructs were tested for normalcy using the Q-Q plot and histogram and the results are as given below:

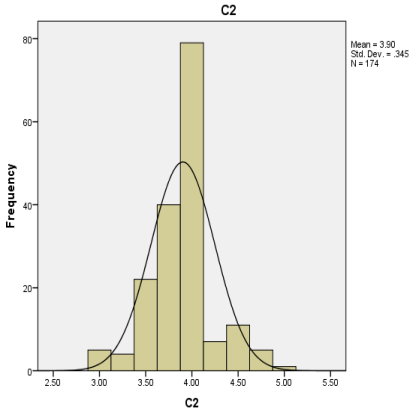
Construct-1: General Satisfaction - The data as given below is normally distributed.

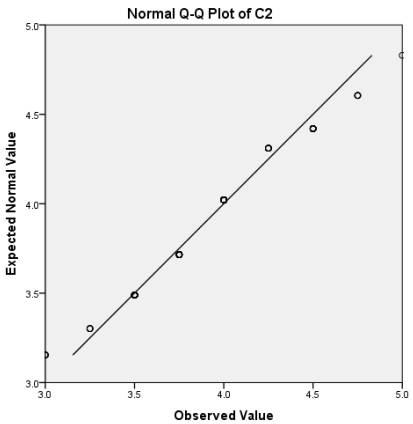




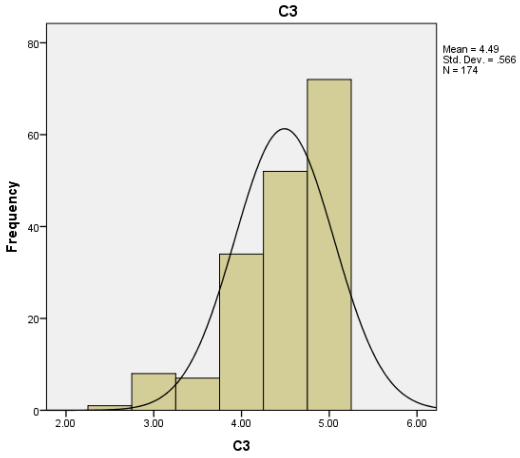
Construct -2: Technical Quality: The Normal Q-Q bubble plot for this construct with the data

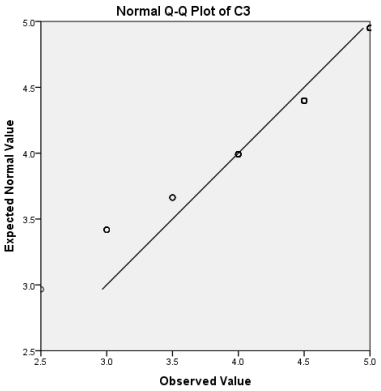
distribution is shown. The data is normally distributed.



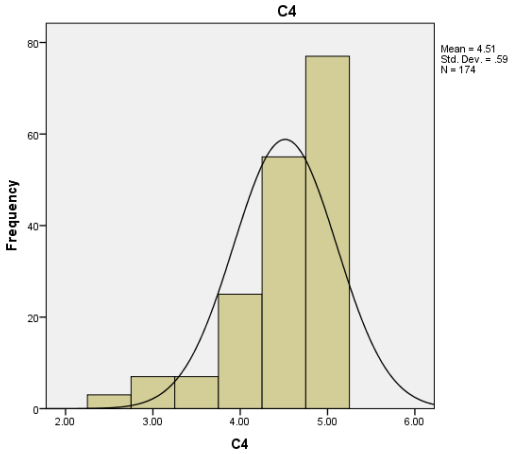


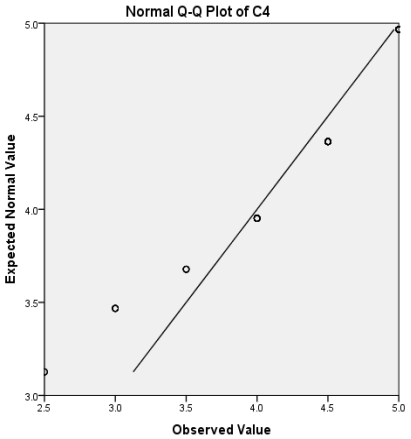
Construct-3: **Interpersonal Matter**: The Normal Q-Q bubble plot for this construct with the data distribution is shown below. The data is normally distributed.



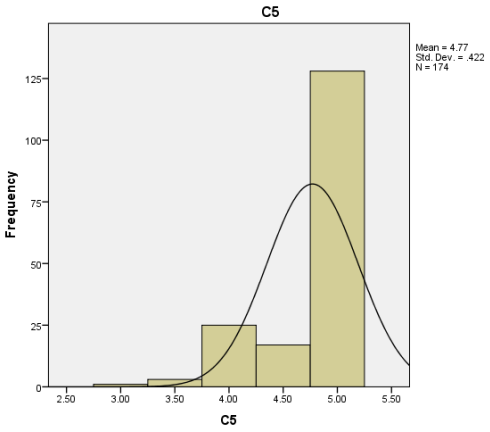


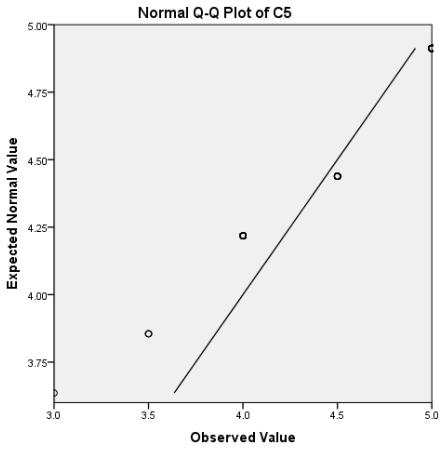
Construct-4: Communication: The Normal Q-Q bubble plot for this construct with the data distribution is shown below. The data is normally distributed.



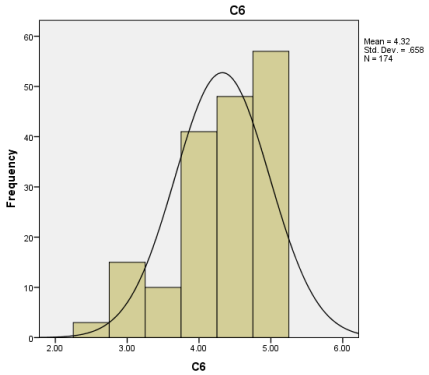


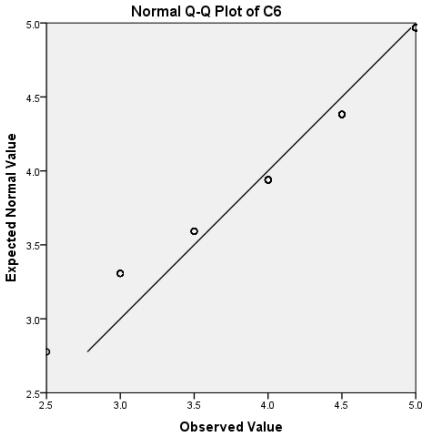
Construct-5: Covid Preventive aspects**: Normal distribution seen as below**



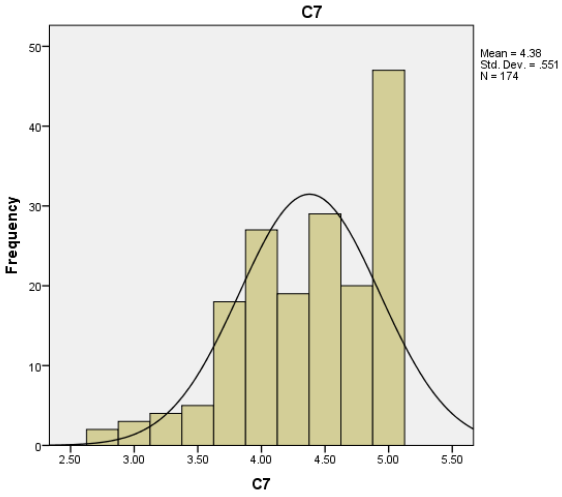


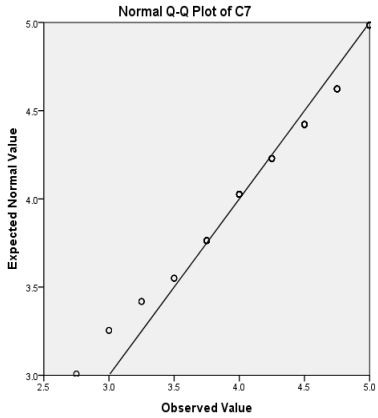
Construct-6: Time spent with doctor: The Q-Q plot and histogram show a normal distribution.





Construct-7: Accessibility and Convenience: The QQ plot and histogram depict a normal distribution for the construct.





4. Tests of Reliability

Cronbach's Alpha value for the n-174 responses for Q1-Q18 was 0.867 and for the constructs C1-C7 was 0.901 as shown below. Both the values are more than 0.60 and therefore the data is considered reliable statistically.

Case Processing Summary

		N	%
Cases	Valid	174	100.0
	Excluded[a]	0	.0
	Total	174	100.0

a. List-wise deletion based on all variables in the procedure.

Reliability Statistics Q1-Q18		**Reliability Statistics C1-C7**	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.867	18	**0.901**	7

Descriptive Statistics

The descriptive statistics for each construct is as given in Table with inference.

Table 6.13: Descriptive statistics for PSQ 18 based survey

		Statistic	Remarks
C1: General Satisfaction	Mean	**4.4971**	Negative skewness and positive Kurtosis. Mean is in favour of general satisfaction to be high and well received
	Variance	0.351	
	Skewness	**-1.148**	
	Std. Error of Skewness	0.184	
	Kurtosis	**0.537**	
	Std. Error of Kurtosis	0.366	
C2: Technical Quality	Mean	**3.9023**	Positive skewness and kurtosis. Mean at 3.90 indicates that most respondents felt technical quality to be adequate. However this factor is not higher than most other mean construct scores as seen below.
	Variance	0.119	
	Skewness	**0.104**	
	Std. Error of Skewness		
	Kurtosis	**1.25**	
	Std. Error of Kurtosis		
C3: Inter-personal matter	Mean	**4.4885**	Negative skewness and positive Kurtosis. Most respondents agreed with good quality interpersonal interactions and care
	Variance	0.321	
	Skewness	**-1.138**	
	Std. Error of Skewness	0.184	
	Kurtosis	**0.931**	
	Std. Error of Kurtosis	0.366	
C4: **Communication**	Mean	**4.5144**	Negative skewness and positive
	Variance	0.348	

	Skewness	**-1.444**	kurtosis.
	Std. Error of Skewness	0.184	At a mean score of 4.51 most respondents felt that communication is good
	Kurtosis	**1.87**	
	Std. Error of Kurtosis	0.366	
C5: Covid preventive steps	Mean	**4.7701**	Negative skewness and positive kurtosis.
	Variance	0.178	
	Skewness	**-1.704**	Most respondents agree with good quality of covid-preventive steps in place at the healthcare facility. The mean score is high at 4.77
	Std. Error of Skewness	0.184	
	Kurtosis	**2.018**	
	Std. Error of Kurtosis	0.366	
C6: Time spent with doctor	Mean	**4.3247**	Negative skewness but with a positive kurtosis.
	Variance	0.433	
	Skewness	**-0.868**	Most respondents agree with this construct being adequate.
	Std. Error of Skewness	0.184	
	Kurtosis	**0.026**	
	Std. Error of Kurtosis	0.366	
C7: Accessibility and Convenience	Mean	**4.3779**	Negative skewness and negative kurtosis.
	Variance	0.304	
	Skewness	**-0.668**	Most responses at a mean score of 4.37 indicate that the patients are satisfied to a high degree with the accessibility and convenience construct.
	Std. Error of Skewness	0.184	
	Kurtosis	**-0.133**	
	Std. Error of Kurtosis	0.366	

Analysis of variance in data between patient groups

There were no radically different groups among patients except for gender and age groups. However ANOVA was done to look for significant variations between and among these groups with the following results in Table 6.10

Table 6.14: ANOVA for PSQ18 survey results

		Sum of Squares	df	Mean Square	F	Sig.
C1	Between Groups	.286	4	.072	.200	.938
	Within Groups	60.463	169	.358		
	Total	60.749	173			
C2	Between Groups	1.173	4	.293	2.551	.041
	Within Groups	19.417	169	.115		
	Total	20.589	173			
C3	Between Groups	1.163	4	.291	.904	.463
	Within Groups	54.314	169	.321		
	Total	55.477	173			
C4	Between Groups	1.822	4	.455	1.318	.265
	Within Groups	58.392	169	.346		
	Total	60.214	173			
C5	Between Groups	.476	4	.119	.662	.619
	Within Groups	30.329	169	.179		
	Total	30.805	173			
C6	Between Groups	3.885	4	.971	2.311	.060
	Within Groups	71.019	169	.420		
	Total	74.904	173			
C7	Between Groups	2.133	4	.533	1.786	.134

Within Groups	**50.460**	**169**	**.299**		
Total	**52.592**	**173**			

The value of significance being less than 0.05 or five percent, there were no variations in responses that were statistically significant for constructs C-1 to C-7 with the exception of C-2 (Technical Quality) where there were inter-group variations that were found significant. An explanation would be that different age groups with experience and information regarding technical quality may have perceived this differently.

The various constructs of general satisfaction; technical quality; interpersonal matter; communication; time spent with doctor; financial aspects and accessibility and convenience are matched with questions as follows. A ranking of the highest to the lowest score has also been done.

Table 6.15: Scoring system for PSQ18 Constructs with ranking

	Construct	**Q No**	Average Score	Ranking
1	**General Satisfaction**	3,17	4.75	**3**
2	**Technical Quality**	2,4,6,14	3.78	7
3	**Interpersonal Matter**	10,11	4.72	4
4	**Communication**	1,13	4.70	5
5	**Covid Preventive**	5,7	4.77	**1**
6	**Time spent with doctor**	12,15	4.77	**1**
7	**Accessibility and Convenience**	8,9,16,18	4.49	6

All scores are the averages of the questions mentioned against each. All scores are higher than 3 and six out of seven scores are higher than 4 out of 5 indicating a very high and positive feedback from the patients. Covid protocols, time spent with doctor and general

satisfcation has received the highest scores of 4.77 to 4.75. Technical quality has received a lower score of 3.78.

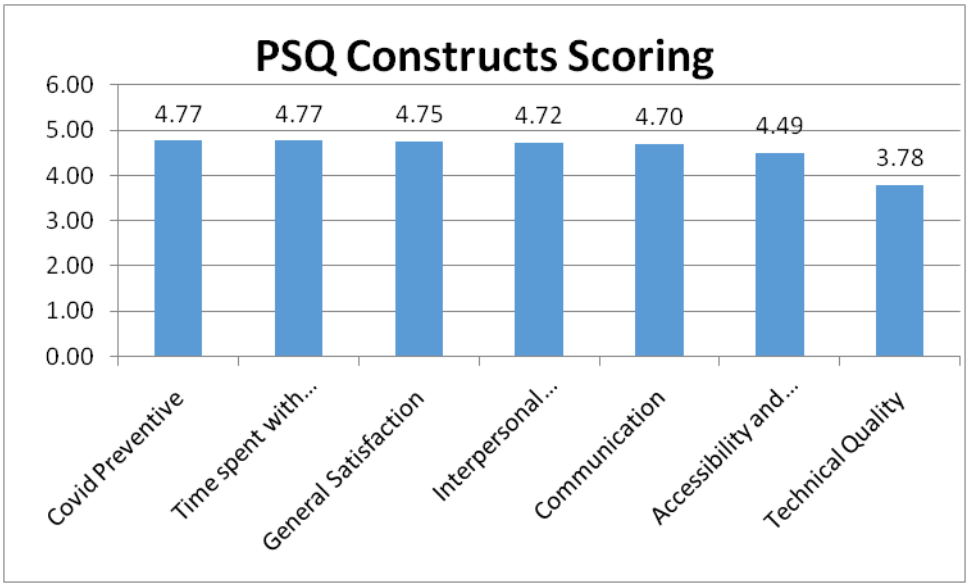


Fig 6.15: PSQ18 Constructs scoring

The patient satisfaction survey revealed a high standard of hospital services that have returned to normal after the initial covid pandemic years.

SCORING OF CONSTRUCTS AS PER GENDER AND AGE GROUPS IN PSQ SURVEY

The mean scores of the seven constructs of PSQ questionnaire are depicted as per age groups in the study and gender distribution in the following paragraphs

Construct-1: General Satisfaction.

There were two questions used for assessment of general satisfaction namely question 3 and question 17.

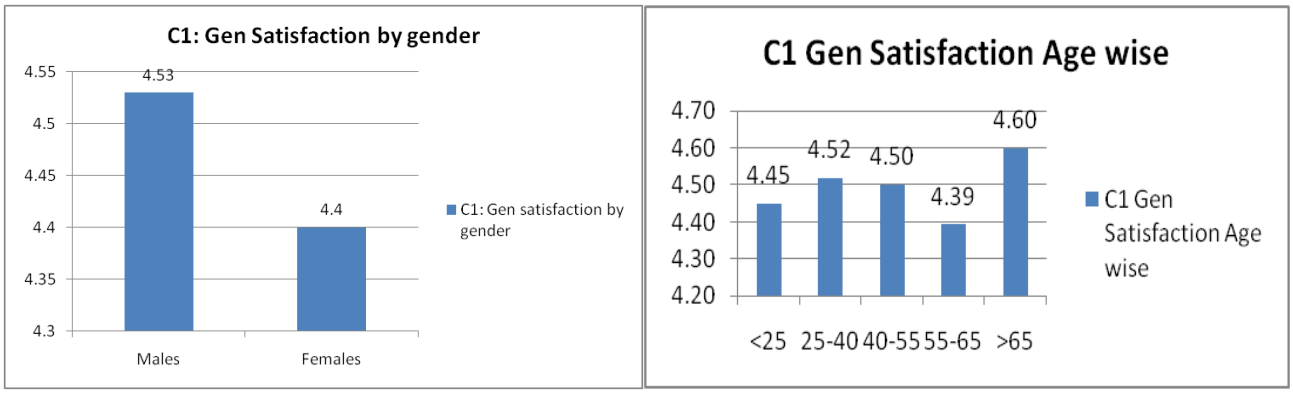


Fig 6.16: C-1 responses by gender and age groups

Males gave a more positive response to the general satisfaction query than females and this was statistically significant with p value of 0.036. Among the age groups the senior citizens above 65 years of age gave a more positive response. All responses were above mean of 4.39 indicating very high satisfaction levles at the present stage.

Construct-2: Technical Quality

This construct was assessed by using a total of four questions.

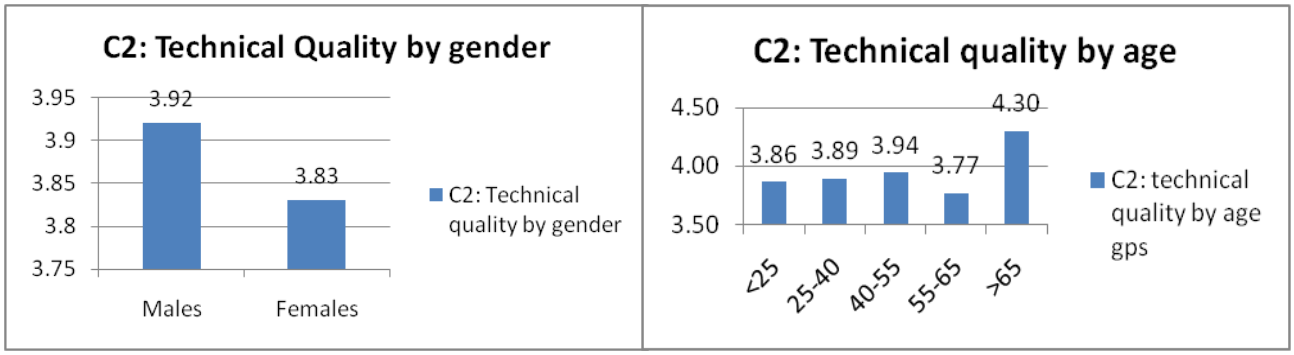


Fig 6.17: Responses to C-2 by gender and age groups

Male patients reported higher satisfaction on the technical quality than female patients. Age group wise a higher satisfaction was reflected by the age group above 65 years. The correlation with age group was statistically significant too with a p value of 0.001. as a combined score of all constructs the construct on technical quality had the least mean score at 3.78 in comparison to all other constructs. This was due to a lower response on question number 4 related to diagnosis as understood by the patient—the mean score was 1.75

Overall however the construct score at 3.78 is well above the median of 3 (neutral) indicating overall satisfaction and agreement.

Construct-3: Interpersonal Matter

Assessed by using two questions out of 18 and indicated below Fig 6.17

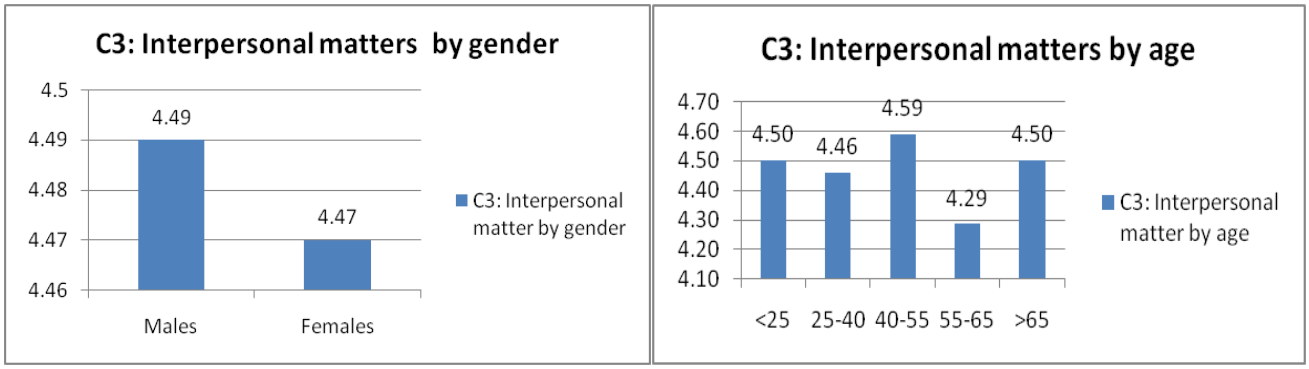


Fig 6.18: C3 responses by gender and age groups

Male patients and patients between the ages of 40 to 55 years gave the best responses and appeared satisfied with score above 4.5.

Construct-4: Communication

Assessed using two questions.

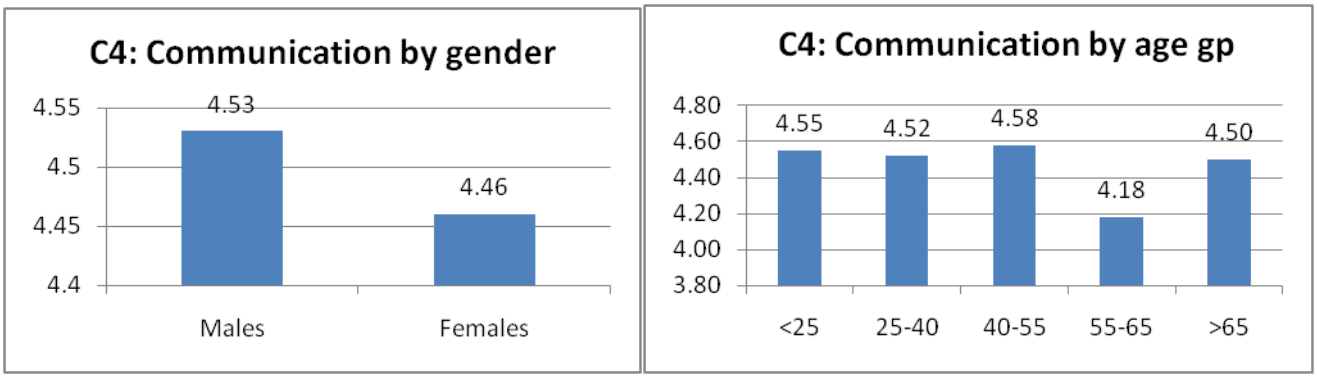


Fig 6.19: responses to C-4 by gender and age group

Once agin male patients scored higher on satisfaction response on this construct. The 40 to 55 year age group responded with higher scores than the other age groups.

Construct-5: Covid Prevention Aspects

This construct recorded the responses to two questions used to assess the status of covid preventive aspects at the healthcare centre. The responses are as given below (Fig 6.19)

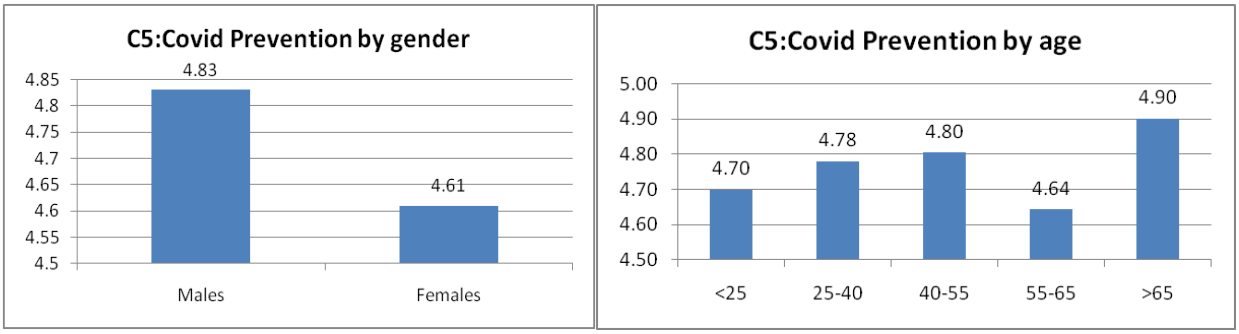


Fig 6.20: responses to C-5 by gender and age group

Males had a higher mean score on satisfaction levels with covid prevention. On running crosstabs this association was statistically significant too with p value of 0.005. As expected in the age group the elderly patients above 65 years who are the most vulnerable were more satisfied with the covid protocol presence at healthcare centres

Construct-6: Time spent with doctor

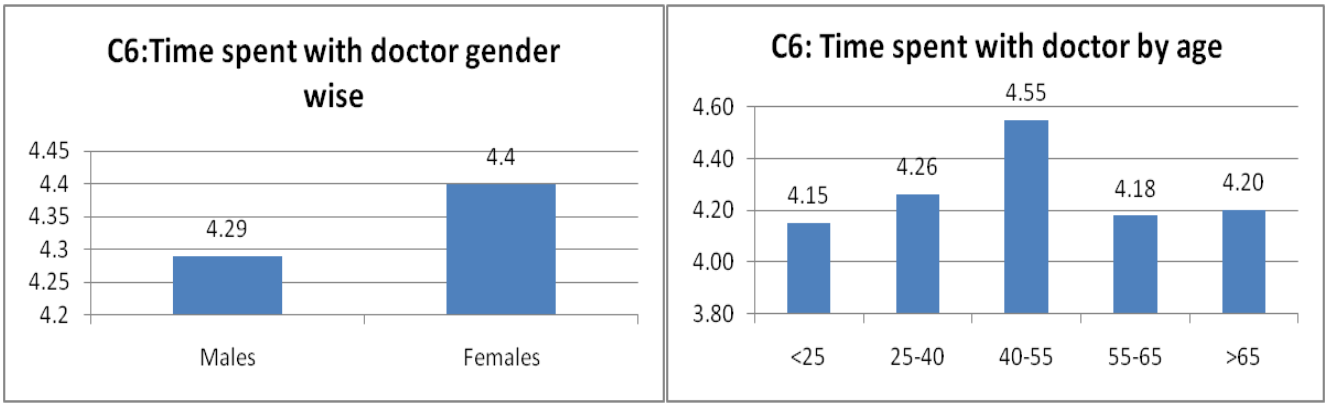


Fig 6.21: Responses for C-6 by gender and age

Female patients scored higher than male patients on time spent with doctor with a mean score of 4.4. Among the age groups 40 to 55 year olds felt more positively about time spent with the doctor with a mean score of 4.55.

Construct-7: Accessibility & Convenience

Accessibility and convenience plays an important part in the evaluation of a healthcare system. Hence this construct was assessed using four questions out of the total of 18 questions with the following response (Fig 6.21)

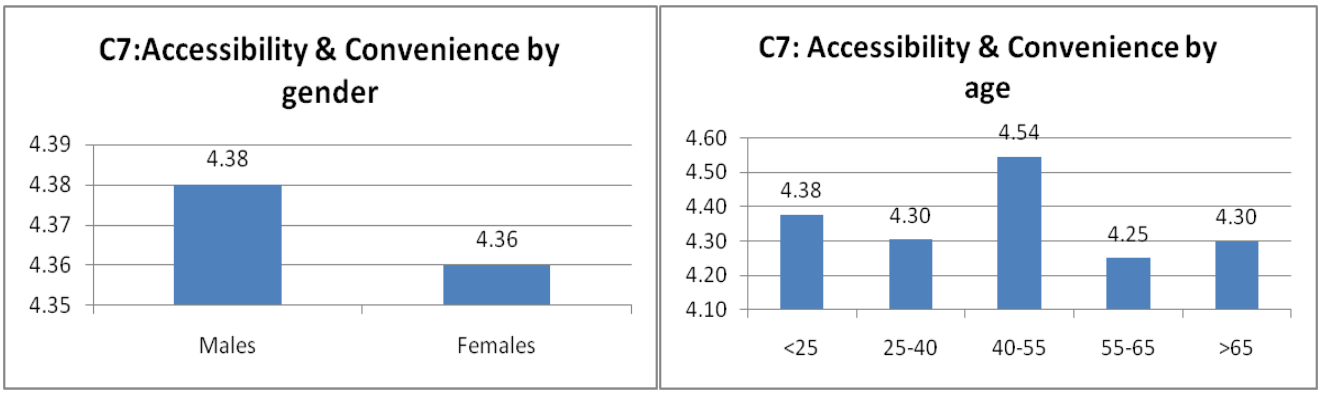


Fig 6.22: C-7 responses by gender and age group

Male patients and patients between the ages of 40 to 55 years scored higher with their responses.

This patient satisfaction survey returned a very high degree of satisfaction from the patient-clientele across the board with a mean score of 4.56 on a scale of 1 to 5 when all constructs are taken together from general satisfaction to accessibility and convenience along with technical quality and other interpersonal matters including communication. This shows that overall the patient services have come back to near normal at the present stage of the pandemic.

Pre-pandemic studies at various tertiary care hospitals have shown excellent patient satisfaction in terms of first impression to clinical and nursing care and hospitality (Naik JR et al 2015). This study had 500 samples and a semi-quantitative analysis was done. The study differs from our study in that food and hospitality was not included but covid protocols were inserted into the study. No quantitative comparison can be given however between these studies.

Similar other studies (Rao KD et al 2006) before the pandemic have reported lower satisfaction mean of 3.59 on scale of 5 compared to our study with a mean score of 4.5 on the similar scale. However the variables are different.

Manimay Ghosh and team published their empirical study on measuring patient satisfaction from Bhubaneswar in 2013-14 with satisfaction levels average of 3.5 on a scale of 5 (Ghosh M 2014). Our study has returned an average score of 4.56 on the same scale.

A study from King Khalid University Hospital at Riyadh, Saudi Arabia studied the patient satisfaction levels in surgical patients and reported a high satisfaction level more than 77% (64% to 90%) from patients during the initial stages of the pandemic (Traiki TAB et al 2020). Compared to our study towards the third year of the pandemic when services have returned, the satisfaction levels are comparable.

Chapter VII

CONCLUSIONS, LIMITATIONS OF STUDY AND RECOMMENDATIONS

I. CHALLENGES FACED BY HCW

The COVID pandemic crisis starting from the last month of 2019 drastically and irreversibly altered the healthcare paradigm and compelled doctors, their nursing and support teams, and other frontline medical staff including health administrators to take on the role of torch bearers. India declared its first case from Kerala on 29 Jan 2021 and the numbers kept increasing from that stage.

When the corona virus sickness was declared a pandemic, the government and public rallied behind medical and paramedical healthcare personnel, identifying them as frontline soldiers and dubbing them 'corona warriors.' Warriors all over the world are concerned about their adversary and especially so if that enemy is an invisible virus with no past recorded immunity and towards which we are ill prepared in terms of resources.

Healthcare professionals have suffered serious setbacks in their personal lives, families, relationships, and mental health. Numerous changes were observed like social avoidance, home confinement, stress, work-life balance, and financial stress. Added to this was the low support received from society due to all round fear of the disease.

This study has therefore looked at the perceptions of the healthcare workers regarding all the likely stressors that they endured during the crisis period of almost two years. The 18 variables with a higher score indicating agreement with the general import of the question were reduced or grouped into 8 constructs as discussed in Chapter VI. Almost all the responses had a mean score higher than 3. This also indicates the relevance of these factors as contributing in nature.

The least stressful factor was resource distribution in terms of medicine supplies, physical fitness levels and biomedical waste disposal (Fig 6.1 below reproduced from Chapter VI)

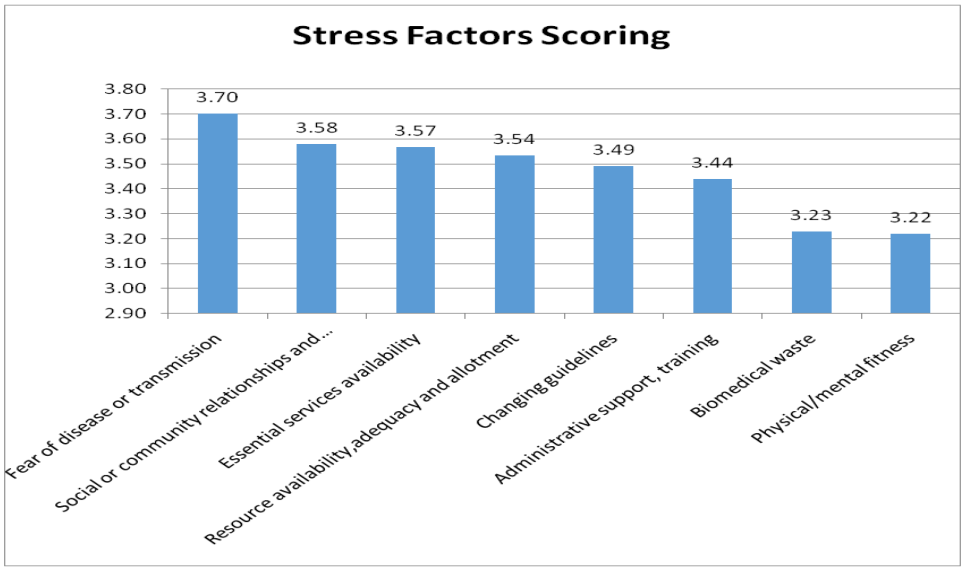


Fig 6.1 Depicts the ranking of the eight constructs HCW

Fear of the disease or transmission was universally high at the initial phase of the pandemic followed closely with lack of community and social relations, disruption of essential services and resource availability as stress factors for the HCW (Fig 6.2). The nursing staff reported lower on the fear of disease parameter than treating doctors! Health status of the individual HCW or those of the team or their motivation levels were much lower in the scoring system.

Thus it is essential to understand that anxiety and depression incidents stated among HCWs in various studies need to consider these antecedent factors as perhaps causative in nature and therefore largely modifiable. All the aforementioned constructs pertaining to fear of disease, relationships and adaptability, resource constraints and such other workplace stressors including biomedical waste disposal, administrative support and general health issues played a role in adding to the stress of the HCW at all levels.

Data analysis revealed that the sampling was adequate and reliable; tests of normality revealed that the responses had a close to normal distribution; further there were no statistically significant variation in responses among the different groups of HCW though different groups may have scored higher or lower for certain variables.

The constructs on fear of disease and its transmission; supply of essentials; resource allocation, its adequacy and availability; frequently changing guidelines of treatment and biomedical waste disposal were all statistically significant stressors for the women healthcare workers. As per job profile fear of disease and its transmission along with supply of essentials and frequently changing guidelines were statistically significant stressors for all healthcare workers. The remaining constructs too scored high on the scale with the exception of resource allocation that was not a strong enough stress factor when compared to the others.

The author would like to emphasise here that stress factors for the healthcare workers goes beyond just the fear of disease and mental/physical health status. Researchers need to look at all the environmental, social and economic factors including medical issues like frequently changing guidelines of management to arrive at a complete picture.

The world has not witnessed a large scale pandemic like the covid in the last hundred years but owing to man-mammal proximity and climate change it is predicted that pandemics may not be an infrequent phenomenon in the decades to come. We need our healthcare workers to be well prepared, supported by society and adequately resourceful--both organizationally and individually—to reduce morbidity and mortality of such invisible foes.

II. CHANGES IN HOSPITAL SERVICES FOR NON-COVID PATIENTS DURING PANDEMIC AT A MIXED COVID HOSPITAL

During the pandemic, missing or decreasing non-covid clientele was a problem, especially in the first year of 2020 (the first wave of the pandemic). The frequent lockdowns and other limitations imposed to halt the pandemic's spread have resulted in an even lower number of patients reaching a hospital. The non-covid patient had a tough time continuing his therapy because much of the attention was focused on the isolation wards, confinement zones, and other covid institutions. By analysing the shift in numbers from previous data of three years collected from a multi-specialty secondary care hospital, this study has addressed the missing non-covid customers throughout the pandemic years.

The reduction in total OPD was 44.74% for the year 2020 and 39.44% for the year 2021 as estimated. The general OPD numbers had gone down by 51.69% for 2020 and 41.61% for the year 2021 estimated. Similarly the specialist OPDs have reduced by 34.56% during the year 2020 and 36.26% for the year 2021 estimated. The reduction in general and total OPD numbers seem to have improved in 2021 as compared to 2020 perhaps due to better understanding of the disease and the onset of vaccinations.

Our results are largely in line with a few studies from abroad as we did not come across an Indian hospital –based study reflecting these absolute numbers. A US study in 2020 has stated reduction in patient numbers ranging from 42% to 44% below baseline in various subgroups as compared to previous years (Birkmeyer JD et al 2020). We hypothesize that these reductions are due to the fear of transmission of the disease combined with lockdown or lockdown –like restrictions in place. This could also be due to curtailment of non-emergent surgeries and treatments in most hospitals in order to divert the already stretched resources towards covid cases. Many patients, in collaboration with their

doctors, may have made informed decisions to postpone or avoid hospitalisation during the pandemic.

Emergency admissions and in-hospital mortality: Various studies have published a reduction in number of emergency cases reaching hospitals as well as reduction in actually admitted emergency care patients (Birkmeyer JD et al 2020). These studies have also reflected a decrease in in-hospital non-covid deaths as well increase in out-of-hospital deaths of patients especially in the senior age group (SantiI L et al Dec 2020). However our study gave a different perspective to emergency admissions and in-hospital mortality rates.

However in our study of a single 350 bedded mixed covid hospital showed a different picture. The emergency visits of non-covid cases **did not show a decrease** in relation to the number of patients reporting to the hospital outpatient departments. In fact there was a small increase in the number of patients reporting to the emergency rooms from 112 the previous year to 128 in the year 2020. This assumes significance when viewed as a fraction of the total patients reporting to the hospital in that year to the emergency room i. e. from 0.2% to 0.4%.

All cause in-hospital mortality rates showed a significant increase from the existing numbers of the past three years. The non-covid hospital mortality did not show a significant change from previous years. There was also no increase in brought-in-dead patients or patients dying at home as compared to previous three years.

The figure (Fig 6.5 reproduced from Chapter VI) below depicts mortality from all causes covid as well as non-covid for the years 2020 and 2021. For the year 2020 ten deaths were due to non-covid and six deaths were due to covid related causes. For the year 2021 data shows a total of 34 deaths mostly from covid causes.

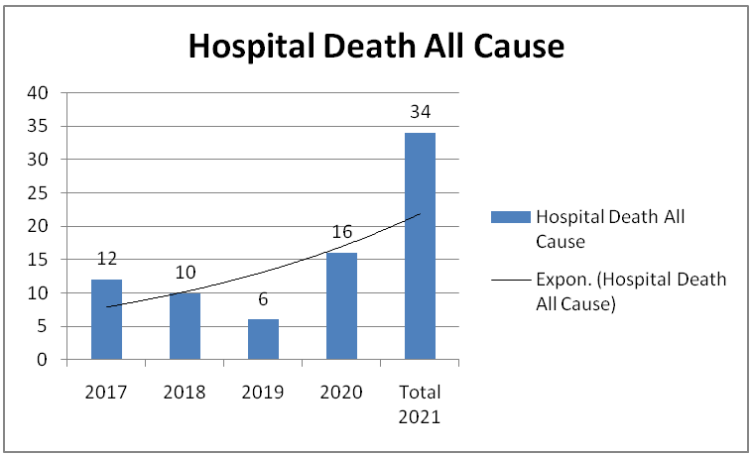


Fig 6.5: All cause in-hospital mortality from 2017

The reduction in specialist OPD attendance was reduced by almost a third for almost all with maximum reduction in surgeries in department of Eye and department of ENT as expected.

Thus there has been a significant reduction in attendance by patients for non-covid causes during the year 2020 with a marginal improvement in the year 2021. No reductions in emergency admissions or care were observed and neither was there a change in in-hospital or at home death of non-covid cases as depicted in many studies from Italy and US.

Worldwide the causes of the disruptions of health services were a mix of demand and supply factors. On the demand side, 76% of countries reported reductions in outpatient care attendance. Other factors, such as lockdowns hindering access and financial difficulties during lockdown were also mentioned. On the supply side, the most commonly reported factor was cancellation of elective services (66%). Other factors

mentioned included staff redeployment to provide COVID-19 relief, unavailability of services owing to closures of health facilities or health services, and supply-chain difficulties (WHO interim report 27 Aug 2020)

Overall our figures are in tandem with reported figures of US publications and not too much out of the way from estimated figures in the Indian press and publications.

III. PATIENT SATISFACTION SURVEY

It is well understood that the hospital services took a major toll during the pandemic due to universal fear of the disease, administrative lockdowns and restrictions and priority given to covid cases in order to save lives and to flatten the curve of the pandemic. However by Dec 2021 and beginning of 2022 with the larger proportion of the population having been vaccinated, our study was aimed at getting a feedback from patient-clientele regarding their experience with the current state of service delivery. The results have already been discussed in previous chapter where the survey was based on 18 variables grouped into seven constructs in a pre-existing pre-validated questionnaire PSQ18 with minor modifications.

Our study concluded that the patient-clientele of all age groups and both genders were highly satisfied with all the seven constructs quantitatively measuring general satisfaction; technical quality; interpersonal matter; communication; covid-preventive measures; time spent with the doctor and access and convenience. The ranking of the constructs are depicted in Fig 6.6 reproduced below.

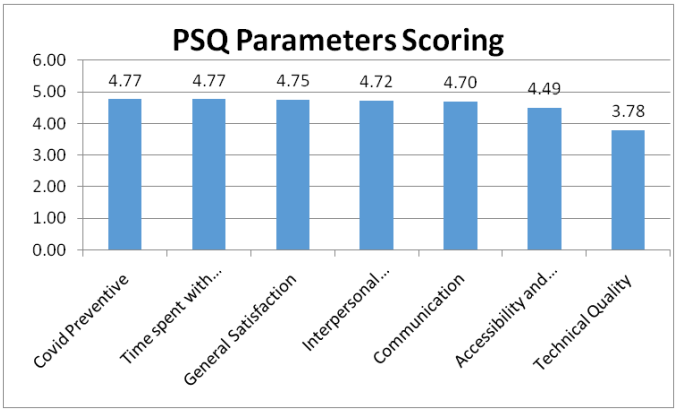


Fig 6.6: Ranking & Scoring on constructs PSQ18

The least score was on technical quality involving questions regarding diagnosis which may or may not be fully understood by the patient.

Overall there was a high level of satisfaction. The data analysis revealed that our sampling was adequate, the test of reliability was adequate, the tests of normality depicted a near-normal distribution and tests of variance did not find any inter-group or intra-group variations in responses that were statistically significant.

Limitations of our study: The study is limited to the healthcare workers and patients of military hospitals which may or may not reflect the overall scenario existing in government or private health sector.

It was heartening to note the positive responses given by all respondents—healthcare workers as well as patients--- inspite of the fact that the collection of data by electronic means gave the option of anonymity to them. The author, being a healthcare worker and a health administrator who was actively involved during the pandemic period, feels that we could have helped the average healthcare worker better by addressing modifiable factors of stress such as better community support, supply of essentials, better resource distribution; reduce frequency of changing guidelines on covid and such other factors of likely stress. These are our lessons learned for the future. Dissemination of information and good hospital service delivery at this stage in the pandemic will definitely yield even better results as far as the patient satisfaction is concerned.

When compared to a few studies of patient service delivery related satisfaction (quoted under results and discussion) pertaining to both pre-covid and during covid, our study has a higher score of satisfaction at 4.5 plus out of a total of 5 which speaks about the status of health services as on date.

The Way Ahead---Stay Prepared

'The more you sweat in peace the less you bleed in war!'

The stress factors for the healthcare workers go beyond just the fear of disease and mental/physical health status repeatedly seen in literature. Researchers need to look at all the environmental, social and economic factors including medical issues like frequently changing guidelines of management to arrive at a complete picture. Avoid the tunnel vision and this might help up stay ahead for a future pandemic or a disaster-like situation.

The world has not witnessed a large scale pandemic like the covid in the last hundred years but owing to man-mammal proximity and climate change it is predicted that pandemics may not be an infrequent phenomenon in the decades to come. We need our healthcare workers to be well prepared, supported by society and adequately resourceful--both organizationally and individually—to reduce morbidity and mortality of such invisible foes. The training lessons learnt during this pandemic will come handy professionally as well as administratively for the health care sector. We now know the extent to which triage of cases need to be done, we are prepared as a society for video-consultations and tele-consultations and we have a fair idea to isolate and manage by both quarantine and reverse-quarantine of the susceptible.

Patient satisfaction is a major issue for healthcare delivery and this is best achieved by an early return to routine medical care with all due precautions during a waning pandemic. Our patient-clientele have expressed their satisfaction of a high level across age and gender and the medical fraternity needs to acknowledge this as well as keep the flag flying high.

Multi-tasking and cross employment of healthcare workers across specialties and training them to combat covid has paid rich dividends as seen by a low mortality rate and success of immunization.

This is a success lesson for our leadership of the day--- while studying the pandemic and its effects on us, it is also critical to review the things that our organisation and nation as a whole did successfully to control the pandemic. A lot of our success at this stage has been built on the importance of attentive leadership, the need to ensure that people have enough provisions and financial means to follow public-health guidance, and a shared understanding that individuals and communities must contribute to protect the well-being of its people.

REFERENCES AND BIBLIOGRAPHY

List of References

Aashima, Nanda M., & Sharma, R. (2021). A review of patient satisfaction and experience with telemedicine: a virtual solution during and beyond COVID-19 pandemic. Telemedicine and e-Health, 27(12), 1325-1331

Abdulah DM and Saeed MS (July2021). The response of medical doctors and hospital administration to infection prevention and control in the health care of suspected/confirmed covid-19 patients. Infect Dis Clin Pract Jul 2021;29: 224–229

Abraham DA, Thangavel MV and Muhasaparur GR (2020). Challenges of non-COVID-19 patients with chronic illness during the pandemic. J Res Pharm Pract. 2020 Jul-Sep; 9(3): 155–157. doi: 10.4103/jrpp.JRPP_20_64: 10.4103/jrpp.JRPP_20_64

Bajpai,, V. (2014). The challenges confronting public hospitals in India, their origins, and possible solutions. Advances in Public Health, 2014. https://doi.org/10.1155/2014/898502

Birkmeyer JD, Barnato A, Birkmeyer N, Bessler R & Skinner, J. (2020). The impact of the COVID-19 pandemic on hospital admissions in the United States: study examines trends in US hospital admissions during the COVID-19 pandemic. *Health Affairs*, *39*(11), 2010-2017.

Catherine Smith (2020). The structural vulnerability of healthcare workers during COVID-19: Observations on the social context of risk and the equitable distribution of resources. Social Science & Medicine; 2020;258;113-119.

Chowdhury, P., Paul, S. K., Kaisar, S., & Moktadir, M. A. (2021). COVID-19 pandemic related supply chain studies: A systematic review. *Transportation Research Part E: Logistics and Transportation Review*, *148*, 102271.

European Centre for Disease Prevention and Control-Fourth Update 2020. "Outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): increased transmission beyond China – fourth update" (PDF). 14 February 2020. Retrieved 08 Nov 2021.

Fuqiang Z, Ahmad F, Ahmad Faraz N (July 2020). Caring for the caregiver during COVID-19 outbreak: Does inclusive leadership improve psychological safety and curb psychological distress?--A cross-sectional study. Int J of Nursing Studies 110: 2020:103725. Elsevier online access https://doi.org/10.1016/j.ijnurstu.2020.103725.

Gerbutavicius R ,Brandlhuber U, Glück S, Kortüm GF, Kortüm I,Navarrete R, Orozco M, Rakitin M, Strodtbeck A, Wolf K, Kortüm U (2021). Evaluation of patient satisfaction with an ophthalmology video consultation during the COVID-19 pandemic. Ophthalmologe 2021 · 118 (Suppl 1):S89–S95

Ghosh M (2014). Measuring patient satisfaction: An empirical study in India. *Leadership in Health Services* Jul1:2014

Ghosh S, Moledina N, Hasan MM, Jain S and Ghosh A. (2021). Colossal challenges to healthcare workers combating the second wave of coronavirus disease 2019 (COVID-19) in India. Infection Control & Hospital Epidemiology 2021;1-2 doi:10.1017/ice.2021.257

Goswami, M., Goswami, P. J., Nautiyal, S., & Prakash, S. (2021). Challenges and actions to the environmental management of Bio-Medical Waste during COVID-19 pandemic in India. *Heliyon*, *7*(3), e06313.

Guo WP, Min Q, Gu WW, Yu L, Xiao X, Yi WB, Li HL, Huang B, Li JL, Dai YJ, Xia J, Liu J, Li B, Zhou BH, Li M, Xu HX, Wang XB, Shi WY (Mar 2021). Prevalence of mental health problems in frontline healthcare workers after the first outbreak of COVID-19 in China: a cross-sectional study. Health Qual Life Outcomes. 2021 Mar 22;19(1):103. doi: 10.1186/s12955-021-01743-7. PMID: 33752686; PMCID: PMC7983094.

Hoernke K, Djellouli N, Andrews L, Lewis-Jackson S, Manby L, Martin S ,Vanderslott S, Vindrola-Padros C (2021). Frontline healthcare workers' experiences with personal protective equipment during the COVID-19 pandemic in the UK: a rapid qualitative appraisal. BMJ Open 2021;11:e046199. doi:10.1136/ bmjopen-2020-046199 (Accessed 06 Sep 2021)

Hu, Ben, Hua Guo, Peng Zhou, and Zheng-Li Shi (2021). "Characteristics of SARS-CoV-2 and COVID-19." *Nature Reviews Microbiology* 19;3;2021: p141-154.

Kumar, C., & Prakash,, R. (2011). Public-private dichotomy in utilization of healthcare services in India. Consilience, 5, 25–52. https://www.jstor.org/stable/26167801

Lee A. Fleisher, Rachel E. Sweeney, B.A., Justin T. Clapp, M.P.H., Sigal G.Barsade (2020). Managing Anxiety in Anesthesiology and Intensive Care Providers during the Covid-19 Pandemic: An Analysis of the Psychosocial Response of a Front-Line Department NEJM .Vol July 8, (2020).

Liu, H., He, S., Shen, L., & Hong, J. (2021). Simulation-based study of COVID-19 outbreak associated with air-conditioning in a restaurant. *Physics of Fluids*, *33*(2), 023301.

Mandana G,Fawad I, Shadan S, Rowaiee R, Ghanem HA, Khamis AH and Samuel BH (2021). COVID-19 and healthcare workers: A systematic review and meta-analysis. International Journal of Infectious Diseases 104; 335–346

Maskey, R., Fei, J., & Nguyen, H. O. (2018). Use of exploratory factor analysis in maritime research. *The Asian journal of shipping and logistics*, *34*(2), 91-111.

McCabe R, Schmit N, Christen P, D'Aeth JC, Løchen A, Rizmie D, Nayagam S, Miraldo M, Aylin P, Bottle A, Perez-Guzman PN, Ghani AC, Ferguson NM, White PJ and Hauck

K(2020). Adapting hospital capacity to meet changing demands during the COVID-19 pandemic. BMC Medicine 2020; 18:329. https://doi.org/10.1186/s12916-020-01781-w

Melvin C. C. Lee, Swapna Thampi, Hean P. Chan, Deborah Khoo1,Benjamin Z. B. Chin, Donald P. X. Foo, Chong B. Lua, Barnaby Lewin, Rajesh Jacob (2020). Psychological distress during the COVID-19 pandemic amongst anaesthesiologists and nurses. British Journal of Anaesthesia (2020).

Mistry Lalit (Feb 2021). India's healthcare sector transformation in the post COVID-19 era. Mantra-Perspectives from KPMG in India. Online article. Available at https://home.kpmg/in/en/home/insights/2021/02/india-healthcare-sector-transformation-in-the-post-covid-19-era.html (Accessed on 07 Sep 2021)

Mitchinson, L., Dowrick, A., Buck, C., Hoernke, K., Martin, S., Vanderslott, S., ... & Vindrola-Padros, C. (2021). Missing the human connection: A rapid appraisal of healthcare workers' perceptions and experiences of providing palliative care during the COVID-19pandemic. Palliative Medicine, 35(5), 852-861. https://doi.org/10.1177%2F02692163211004228

Mondelli, M. U., Colaneri, M., Seminari, E. M., Baldanti, F., & Bruno, R. (2021). Low risk of SARS-CoV-2 transmission by fomites in real-life conditions. *The Lancet Infectious Diseases*, *21*(5), e112.

Naik, J. R. K., Anand, B., & Bashir, I. (2015). An empirical investigation to determine patient satisfaction factors at tertiary care hospitals in India. *International Journal of Quality and Service Sciences*.

Nazli GK and Celal Gunes (July 2020). How has Covid-19 pandemic affected crowded emergency services?(July 2020) Int J Clin Pract. 2020;74:e13624. DOI: 10.1111/ijcp.13624

Nazli GK,Gunes C (July 2020). How has Covid-19 pandemic affected crowded emergency services? Int J Clin Pract. 2020;74:e13624. DOI: 10.1111/ijcp.13624

Parthasarathy, R., Jaisoorya, T. S., Thennarasu, K., & Murthy, P. (2021). Mental health issues among health care workers during the COVID-19 pandemic–a study from India. Asian Journal of Psychiatry 58: 102626: April 202. https://doi.org/10.1016/j.ajp.2021.102626

Phillips, N (2021). "The coronavirus will become endemic." *Nature* 590;7846 ;2021: p382-384.

Rao, K. D., Peters, D. H., & Bandeen-Roche, K. (2006). Towards patient-centered health services in India—a scale to measure patient perceptions of quality. *International journal for Quality in Health care*, *18*(6), 414-421.

SantiI L, Golinelli D, Tampieri A, Farina G, Manfredi G, Simona R, Michelle Beleffi, Biavati B, Campinoti F, Guerrini S, Ferrari R, Rucci P, Maria Pia Fantini, Giostra F (Dec

2020). Non-COVID-19 patients in times of pandemic: Emergency department visits, hospitalizations and cause-specific mortality in Northern Italy. Research Article PLoS ONE 16(3): e0248995. https://doi.org/10.1371/journal.pone.0248995

Sengupta M, Roy A, Ganguly A, Baishya K, Chakrabarti S and Mukhopadhyay I (2021). Challenges Encountered by Healthcare Providers in COVID-19 Times: An Exploratory Study. Journal of Health Management 23(2) 339 –356, 2021© 2021 Indian Institute of Health Management Research. Available online at in.sagepub.com/journals-permissions-india DOI: 10.1177/09720634211011695 journals.sagepub.com/home/jhm

Shaukat N, Daniyal MA and Razzak J (2020). Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. International Journal of Emergency Medicine 2020;13;40 https://doi.org/10.1186/s12245-020-00299 (Accessed 09 Sep 2021).

Singh D.R., Sunuwar, D.R., Shah, S.K. et al. Impact of COVID-19 on health services utilization in Province-2 of Nepal: a qualitative study among community members and stakeholders. BMC Health Serv Res 21, 174 (2021). https://doi.org/10.1186/s12913-021-06176-y

Singh, K., Kondal, D., Mohan, S. et al. Health, psychosocial, and economic impacts of the COVID-19 pandemic on people with chronic conditions in India: a mixed methods study. BMC Public Health 21, 685 (April 2021). https://doi.org/10.1186/s12889-021-10708-w

Suryavanshi N, Kadam A, Dhumal G,Nimkar S, Mave V, Gupta A, Samyra R and Nikhil Gupte (Aug 2020). Mental health and quality of life among healthcare professionals during the COVID-19 pandemic in India. Brain and Behavior (Open Access). 2020;10:e01837. doi.org/10.1002/brb3.1837 (wileyonlinelibrary.com/journal/brb3).

Thamer A, Bin Traiki, Sulaiman A, Al Shammari , Mohammed N. AlAli, Nadia A. Aljomah, Noura S. Alhassan, Khayal A. Alkhayal, Omar A. Al-Obeed, Ahmad M. Zubaidi. Impact of COVID-19 pandemic on patient satisfaction and surgical outcomes: A retrospective and cross sectional study (2020). Annals of Medicine and Surgery 58 (2020) 14–19.

Thayyil, J., & Jeeja, M. C. (2013). Issues of creating a new cadre of doctors for rural India. International Journal of Medicine and Public Health, 3(1). https://doi.org/10.4103/2230-8598.109305

The International Monetary Fund forecasts the worst recession since the Great Depression. "The Great Lockdown: Worst Economic Downturn since the Great Depression", *IMFBlog*, 14 April 2020 <https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression>. Accessed 14 Dec2021

Traiki, T. A. B., AlShammari, S. A., AlAli, M. N., Aljomah, N. A., Alhassan, N. S., Alkhayal, K. A., ... & Zubaidi, A. M. (2020). Impact of COVID-19 pandemic on patient

satisfaction and surgical outcomes: A retrospective and cross sectional study. *Annals of Medicine and Surgery*, *58*, 14-19.

Verhoeven V , Tsakitzidis G, Philips H, Paul Van Royen (June 2020). Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs. BMJ Open 2020;10:e039674. doi:10.1136/bmjopen-2020-039674

Verma VR, Anurag Saini, Sumirtha Gandhi ,Umakant Dash Muhammad Koya; Projecting demand supply gap of Hospital capacity in India in the face of Covid- 19 pandemic using age structured deterministic SEIR model; www.doi.org10.1101/2020. May (2020).

Virus pandemic figures worldwide 2020 https://www.worldometers.info/coronavirus COVID-19. Accessed updated 26 Feb 2022

Ware Jr, John E., Mary K. Snyder, W. Russell Wright, and Allyson R. Davies. "Defining and measuring patient satisfaction with medical care." Evaluation and program planning 6, no. 3-4 (1983): 247-263.

World Health Organization. (2020). Pulse survey on continuity of essential health services during the COVID-19 pandemic: interim report, 27 August 2020 (No. WHO/2019-nCoV/EHS_continuity/survey/2020.1). World Health Organization publication.

Yanez N D,Weiss NS, and Romand J (2020). "A, Treggiari MM." *COVID-19 mortality risk for older men and women. BMC Public Health* 20 (2020): 1742.

ANNEXURES

Annexure-I

CHALLENGES FACED BY HCW DURING PANDEMIC QUESTIONNAIRE

These questions are about how healthcare workers felt regarding the workplace-professional, interpersonal as well as societal or domestic stressors faced during the pandemic and the participants consent to part with this information voluntarily and of their own free will. Participants do not need to disclose their identity.

Please read each question carefully and answer how strongly do you AGREE or DISAGREE with each of the following statements on a **scale of 1 (strongly agree) to 5 (strongly disagree)**.

		Strongly AGREE	Agree	Uncertain	Disagree	Strongly DISAGREE
1	I was fearful of catching an unintended infection from workplace	1	2	3	4	5
2	I felt alienated from my immediate family due to my work schedule and working in covid wards	1	2	3	4	5
3	My social interactions with my friends and relatives changed negatively due to the pandemic	1	2	3	4	5
4	I found it difficult to meet the essential household supplies for my family during the pandemic	1	2	3	4	5
5	I felt that the availability of PPEs, face masks and sanitizers was a source of stress for me in my work setting	1	2	3	4	5
6	I felt that the distribution of medicines for treating covid cases in my work setting	1	2	3	4	5

	was a source of stress for me					
7	I feel that we faced shortage of isolation beds and oxygen supply for patients during most of the pandemic duration	1	2	3	4	5
8	Our preparedness towards infection control and changes made to the facility layout was a source of workplace stress for me	1	2	3	4	5
9	I feel my treating team was adequately trained and had high motivation levels	1	2	3	4	5
10	I feel that the frequent changes in the treatment guidelines as the pandemic evolved interfered with my management and was a source of professional stress to me	1	2	3	4	5
11	I felt stressed during breaking of bad news to patients relatives frequently	1	2	3	4	5
12	I feel that there was adequate administrative and managerial support and communication for the health care workers during the pandemic	1	2	3	4	5
13	I was very much concerned about the biomedical waste disposal and likely spread of infections and was stressed due to these factors	1	2	3	4	5
14	I faced a certain degree of financial stress and uncertainty during the pandemic	1	2	3	4	5
15	I was physically stressed due to the extended work	1	2	3	4	5

	schedules of the pandemic					
16	My team of healthcare workers were otherwise in good physical fitness shape	1	2	3	4	5
17	I feel that now I am better prepared for handling a similar situation in future	1	2	3	4	5
18	I feel that the society in general was indifferent and unsupportive of the health care workers during the pandemic	1	2	3	4	5

CONSTRUCTS OF HCW QUESTIONNAIRE

Sl No	Constructs HCW	Questions No
C-1	Fear of disease or transmission	1
C-2	Social or community relationships and adaptiveness	2,3,18
C-3	Essential services availability	4,14
C-4	Resource availability, adequacy and allotment	5,6,7
C-5	Changing guidelines	10
C-6	Administrative support, training	8,9,12,17
C-7	Biomedical waste	13
C-8	Physical/mental fitness	11,15,16

Annexure-II

SHORT FORM PATIENT SATISFACTION QUESTIONNAIRE PSQ-18

These questions are about how you feel about the medical care you receive and you consent to share your feedback with us.

Please read each question carefully, keeping in mind the medical care you are receiving now and answer how strongly do you AGREE or DISAGREE with each of the following statements?

		Strongly AGREE	Agree	Uncertain	Disagree	Strongly DISAGREE
1	My doctors are good at explaining the reason for my tests	5	4	3	2	1
2	I think my doctor's office has everything needed to provide complete medical care	5	4	3	2	1
3	The medical care I have been receiving is just about perfect	5	4	3	2	1
4	Sometimes doctors make me wonder if their diagnosis is correct	1	2	3	4	5
5	I feel adequate use of face-mask and social distancing is being maintained at the facility	5	4	3	2	1
6	When I go for medical care they are careful to check for everything when treating and examining me	5	4	3	2	1
7	I feel adequate hand-hygiene and other covid precautions by staff are in place at this hospital	5	4	3	2	1

		Strongly AGREE	Agree	Uncertain	Disagree	Strongly DISAGREE
8	I have easy access to medical specialists I need	5	4	3	2	1
9	Where I get medical care people have to wait too long for emergency treatment	1	2	3	4	5
10	Doctors act too impersonal and business-like towards me	1	2	3	4	5
11	My doctors treat me in a very friendly and courteous manner	5	4	3	2	1
12	Those who provide my medical care sometimes hurry too much when they treat me	1	2	3	4	5
13	Doctors sometimes ignore what I tell them	1	2	3	4	5
14	I have some doubts about the ability of the doctors who treat me	1	2	3	4	5
15	Doctors usually spend adequate time with me	5	4	3	2	1
16	I find it hard to get an appointment for medical care right away	1	2	3	4	5
17	I am dissatisfied with some things about the medical care I receive	1	2	3	4	5
18	I am able to get medical care whenever I need	5	4	3	2	1

Constructs of PSQ18

	CONSTRUCTS	**AVERAGE OF THESE SCORES**
C-1	General Satisfaction	3,17
C-2	Technical Quality	2,4,6,14
C-3	Interpersonal Matter	10,11
C-4	Communication	1, 13
C-5	Covid Preventive Aspects	5,7
C-6	Time Spent With Doctor	12,15
C-7	Accessibility and Convenience	8,9,16,18

Annexure-III

SHORT FORM PATIENT SATISFACTION QUESTIONNAIRE PSQ-18 (Hindi version)

ये प्रश्न इस बारे में हैं कि आपको मिलने वाली चिकित्सा देखभाल के बारे में आप कैसा महसूस करते हैं

कृपया प्रत्येक प्रश्न को ध्यान से पढ़ें, अब आपको जो चिकित्सा देखभाल मिल रही है, उसे ध्यान में रखते हुए और उत्तर दें कि आप निम्नलिखित में से प्रत्येक कथन से कितनी दृढ़ता से सहमत या असहमत हैं?

		दृढ़तापूर्वक सहमत	इस बात से सहमत	अनिश्चितता	असहमत	दृढ़तापूर्वक असहमत
1	**मेरे डॉक्टर मेरे परीक्षणों का कारण समझाने में अच्छे हैं**	5	4	3	2	1
2	**मुझे लगता है कि मेरे डॉक्टर के कार्यालय में संपूर्ण चिकित्सा देखभाल प्रदान करने के लिए आवश्यक सब कुछ है**	5	4	3	2	1
3	**मुझे जो चिकित्सा देखभाल मिल रही है वह बिल्कुल सही है**	5	4	3	2	1
4	**कभी-कभी डॉक्टर मुझे आश्चर्य करते हैं कि क्या उनका निदान सही है**	**1**	**2**	**3**	**4**	**5**
5	**मुझे लगता है कि सुविधा में फेस-मास्क का पर्याप्त उपयोग किया जा रहा है और सोशल डिस्टेंसिंग का पालन किया जा रहा है**	5	4	3	2	1
6	**जब मैं चिकित्सा देखभाल के लिए जाता हूं तो वे मेरा इलाज और जांच करते समय हर चीज की जांच करने में सावधानी बरतते हैं**	5	4	3	2	1

		दृढ़तापूर्वक सहमत	**इस बात से सहमत**	**अनिश्चितता**	**असहमत**	**दृढ़तापूर्वक असहमत**
7	**मुझे लगता है कि इस अस्पताल में कर्मचारियों द्वारा पर्याप्त हाथ-स्वच्छता और अन्य कोविड सावधानियां बरती जाती हैं**	5	4	3	2	1
8	**मुझे आवश्यक चिकित्सा विशेषज्ञों तक आसानी से पहुँचा जा सकता है**	5	4	3	2	1
9	**जहां मुझे चिकित्सा सुविधा मिलती है वहां लोगों को आपातकालीन उपचार के लिए बहुत लंबा इंतजार करना पड़ता है**	**1**	**2**	**3**	**4**	**5**
10	**डॉक्टर मेरे प्रति बहुत अवैयक्तिक और व्यवसायिक व्यवहार करते हैं**	**1**	**2**	**3**	**4**	**5**
11	**मेरे डॉक्टर मेरे साथ बहुत विनम्र व्यवहार करते हैं**	5	4	3	2	1
12	**जो लोग मेरी चिकित्सा देखभाल प्रदान करते हैं वे मेरा इलाज करते समय कभी-कभी बहुत जल्दी करते हैं**	**1**	**2**	**3**	**4**	**5**
13	**डॉक्टर कभी-कभी मेरी बातों को नज़रअंदाज़ कर देते हैं**	**1**	**2**	**3**	**4**	**5**
14	**मुझे इलाज करने वाले डॉक्टरों की क्षमता के बारे में कुछ संदेह है**	**1**	**2**	**3**	**4**	**5**

		दृढ़तापूर्वक सहमत	इस बात से सहमत	अनिश्चितता	असहमत	दृढ़तापूर्वक असहमत
15	**डॉक्टर आमतौर पर मेरे साथ पर्याप्त समय बिताते हैं**	5	4	3	2	1
16	**मुझे तुरंत चिकित्सा देखभाल के लिए अपॉइंटमेंट लेना कठिन लगता है**	**1**	**2**	**3**	**4**	**5**
17	**मुझे मिलने वाली चिकित्सा देखभाल के बारे में कुछ बातों से मैं असंतुष्ट हूँ**	**1**	**2**	**3**	**4**	**5**
18	**जब भी मुझे आवश्यकता हो मैं चिकित्सा देखभाल प्राप्त करने में सक्षम हूं**	5	4	3	2	1