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The perceptions and experiences of health-care providers during Covid-19 pandemic in Karachi, Pakistan: an exploratory qualitative study

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3 **Title:**
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5 2 The perceptions and experiences of health-care providers during Covid-19 pandemic in
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8 3 Karachi, Pakistan: an exploratory qualitative study
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24 **Abstract**

25 Objective: To explore frontline healthcare workers perspectives and experiences of the
26 barriers and facilitators to treat and manage Covid-19 cases.

27 Design and Setting: We conducted an exploratory qualitative study using a purposive
28 sampling approach, at a private tertiary care teaching hospital in Karachi, Pakistan. Study
29 data was analysed manually using the conventional content analysis technique.

30 Participants: Key-informant interviews were conducted with senior management and hospital
31 leadership and in-depth interviews were conducted with frontline healthcare providers.

32 Results: A total of 31 interviews (KIIs=19; IDIs=12) were conducted, between April and
33 May 2020. Three overarching themes emerged. The first was ‘challenges faced by frontline
34 healthcare providers working in Covid-19 wards. Healthcare workers experienced increased
35 anxiety due to the fear of acquiring infection and transmitting it to their family members.
36 They felt overwhelmed due to the exhaustive donning and doffing process, intense work, and
37 stigmatization. The second theme was ‘enablers supporting healthcare providers to deal with
38 Covid-19 pandemic’. Frontliners pointed out several enabling factors that supported hospital
39 staff including a safe hospital environment, adequate trainings, strong system of information
40 sharing and supportive management. The third theme was ‘recommendations to support
41 healthcare workforce during the Covid-19 crisis’. Healthcare workers recommended
42 measures to mitigate current challenges including providing risk allowance to frontliners,
43 preparing a backup health workforce, and establishing a platform to address the mental health
44 needs of the frontliners.

45 Conclusion: This study provides initial evidence base of healthcare providers’ experiences of
46 managing Covid-19 patients in the early stage of the pandemic and highlights measures
47 needed to address the encountered challenges. It offers lessons for hospitals in LMICs to
48 ensure a safe working environment for frontline workers in their fight against Covid-19.

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3 49 **Keywords:** Covid-19, healthcare providers experiences, exploratory qualitative study,
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5 50 Pakistan
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7
8 51 **Strengths and limitations of this study**
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- 10 52 • The frontline healthcare workers are uniquely positioned to address some of the most pressing
11
12 53 issues related to the Covid-19 pandemic; thus, this study is positioned well to explore
13
14 54 experiences of the barriers and facilitators to treat and manage Covid-19 cases.
15
16 55 • One limitation is that to minimise the risk of infection all study respondents were interviewed
17
18 56 online over Zoom and hence the authors did not have the opportunity to build rapport with the
19
20 57 respondents or obtain non-verbal cues during interviews.
21
22
23 58 • The study was unable to conduct focus group interviews, due to the nature of outbreak
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25 59 prevention, which would have provided in-depth information about personal and group
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27 60 feelings.
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61 **Background**

62 Countries around the world are facing unprecedented challenge and are struggling to cope with
63 the Covid-19 pandemic[1]. First discovered in Wuhan, China; Covid-19 has swiftly travelled
64 borders over the last couple of months leaving a trail of high morbidity and mortality with
65 devastating effect on economies[2]. As of June 22, 2020, there have been 9,071,341 confirmed
66 cases globally, with 471,162 deaths[3]. Moreover, 181,088 Covid-19 cases and 3,590 deaths
67 have been reported in Pakistan[4].

68
69 Pakistan share borders with China and Iran; one being the epicentre of the disease and other
70 has seen exponential increase of cases, respectively[5]. The rapidly evolving pandemic has
71 stressed the entire healthcare system of Pakistan and outpaced the capacity of hospitals to meet
72 demand for vital medical resources, such as ventilators, intensive care units (ICU) beds, and
73 personal protective equipment (PPE) [5]. The hospitals in Pakistan are in the midst of
74 responding to the pandemic and are adopting urgent and innovative approaches. These include
75 aspects such as: setting up designated isolation wards for patients diagnosed with Covid-19,
76 procuring and distributing PPE, conducting screening and performing diagnostic tests, delaying
77 non-emergency procedures, and shifting from onsite to tele-consultation OPD services[6, 7].

78
79 Since the time Covid-19 has hit countries, scientific evidence is clustering more around
80 understanding the disease transmission and its pathogenicity. While disease epidemiology is
81 important to understand the spread and risk factors, there is also a need to explore and
82 understand experiences and perceptions of health workforce involved in the Covid-19 crisis[8].
83 As the numbers are increasing, healthcare providers around the world are playing a central
84 role and are making great contributions, while simultaneously facing great challenges[9]. The
85 frontline healthcare workers across the world are uniquely positioned to address some of the

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3 86 most pressing issues related to the Covid-19 pandemic such as: physical burnout due to increase
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5 87 workload, mental exhaustion, fear of becoming infected and infecting others, sense of
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7 88 helplessness due to unavailability of personal protective gear, etc[10, 11]. Experiences from
8
9 89 previous epidemics showed that while healthcare workers are often resilient, they require the
10
11 90 same physical, psychological and social support as others in times of turmoil[12-16]. Initial
12
13 91 research into the physical, emotional and psychological effects of Covid-19 on health
14
15 92 workforce managing Covid-19 patients in Wuhan showed that intensive work tends to drain
16
17 93 frontline healthcare providers physically and emotionally[9, 16].
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24 95 It is therefore significant to not only look to our current scientific knowledge but also to collect
25
26 96 and interpret data on the specific ways this outbreak influences our frontline healthcare
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28 97 workers. This crises situation necessitates investigating frontline healthcare workers
29
30 98 perspectives and experiences of the barriers and facilitators to treat and manage Covid-19
31
32 99 cases. This study provides a holistic view of health-care providers' experiences for the
33
34 100 international community and emphasises on the factors that are necessary to improve the
35
36 101 experiences of health-care providers dealing with Covid-19 pandemic.
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40 102 **Methods**

41 103 *Study design and setting*

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43 104 This formative research employed an exploratory qualitative research design using semi-
44
45 105 structured interviews and a purposive sampling approach. The study was conducted at the
46
47 106 private tertiary care teaching hospital in Karachi, Pakistan.
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52 108 *Data Collection Methods and study participants*

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54 109 The data collection methods for this formative research included key-informant interviews
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56 110 (KIIs) and in-depth interviews (IDIs). Key informants were purposively identified and
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3 111 recruited from senior management and hospital leadership, directly or indirectly involved with
4
5 112 the management of Covid-19 patients. Similarly, participants for In-depth interviews were also
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7 113 purposively recruited and included frontline healthcare providers, directly involved in the care
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9 114 of Covid-19 patients such as, doctors, nurses, and pharmacists.
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116 *Data Collection Procedure*

117 Semi-structured interview guides were designed for KIIs and IDIs. The interview involved a
118 discussion on perceptions about Covid-19 outbreak, along with the barriers and facilitators
119 experienced by healthcare providers while caring for Covid-19 patients. The interview guides
120 were pilot tested with a non-study sample (2 KIIs & 2 IDIs) with the same characteristics as
121 the study sample. The pilot testing offered evidenced-base guidance to improve data collection
122 guides. Before beginning interview, the study investigators explained the study objectives and
123 procedures to eligible healthcare providers and obtained informed consent for their
124 participation in the study. Trained researchers, experienced in qualitative research, conducted
125 online interviews using Zoom. The interviews were conducted in the languages of English
126 and/or Urdu. Study participants were assured that their anonymity will be maintained. Informed
127 consent was also obtained for notetaking and audiorecording of the interview.

128 Key-informant interviews (KIIs)

129 A total of 19 KIIs were conducted with senior management and hospital leadership. These KIIs
130 were conducted to understand the barriers and facilitators faced while managing Covid-19
131 cases at AKUH. The Key Informants were electronically invited to participate in the qualitative
132 study. Each KII took approximately between 30 and 45 minutes.

133 In-Depth Interviews (IDIs)

134 IDIs were conducted with frontline healthcare providers including doctors, nurses and
135 pharmacist who were directly involved in caring for Covid-19 patients. A total of 12 IDIs

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3 136 interviews were conducted with group of frontline healthcare providers. The healthcare
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5 137 providers were identified from the AKUH Covid-19 in-patient wards and out-patient screening
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7
8 138 and testing areas. Frontline healthcare providers were electronically invited to participate in
9
10 139 their off-duty hours. Each IDI took approximately between 30 and 45 minutes.

12 140 *Data analysis*

14 141 Study data was analysed manually using the conventional content analysis technique[17].
16
17 142 Firstly, the audio recordings from the interviews were transcribed and then translated into
18
19 143 English language. No identifying characteristics were included in the transcriptions.
20
21 144 Transcripts were read several times by four research investigators to develop an interpretation
22
23 145 of the perspectives and experiences of the barriers and facilitators to treat and manage Covid-
24
25 146 19 cases. This involved an iterative process where data were coded, compared, contrasted, and
26
27 147 refined to generate emergent themes. The transcribed text was divided into ‘meaning units’
28
29 148 which was later shortened and labelled with a ‘code’ without losing the study context. Codes
30
31 149 were then analysed and grouped into similar categories. In the final step, similar categories
32
33 150 were assembled under sub-themes and main themes. Two independent investigators performed
34
35 151 the coding, and category creation, and discrepancies were resolved through discussion until a
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37 152 consensus was reached.
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3 155 *Ethical considerations*
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5 156 Ethical approval for this study was obtained from the Aga Khan University Ethical Review
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7
8 157 Committee (AKU-ERC) – [2020-3694-9056].
9

10 158 *Patient and Public Involvement*
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12 159 Patient public involvement is a relatively new concept in Pakistan. Our data collection tool was
13
14 160 piloted through two IDIs to ensure that it is inclusive and comprehensive. Frontline healthcare
15
16 161 providers were not involved in the development of research question and design, and data
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18 162 collection decisions.
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20

21 163 **Results**
22

23 164 In this qualitative study, 19 KIIs and 12 IDIs were conducted, between April and May 2020,
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25 165 with a variety of participants including, residents, registered nurses, head nurses, nurse
26
27 166 managers, pharmacists, senior management, and few key individuals from leadership positions.
28
29 167 Data collection was ceased once saturation was achieved. The demographic information for the
30
31 168 KIIs and IDIs participants are illustrated in Table 1. All the study participants (n=31) who
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33 169 were approached by the study team agreed to participate in the study.
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37 170 Table 1: Characteristics of KII and IDI Study Participants (KII=19; IDI=12)
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Characteristics of KII participants		N (%) or mean \pm SD	Median (range)
Gender	Female	11 (57.9%)	
	Male	8 (42.1%)	
Age		45.46 \pm 6.97	45 (34-58)
Designation	Professor	5 (26.3%)	
	Associate professor	7 (36.8%)	

	Assistant professor	2 (10.5%)	
	Manager	3 (15.8%)	
	Leadership role	2 (10.5%)	
Years of Experience		17.39 ± 10.95	19 (1-45)

173

Characteristics of IDI participants		N (%) or mean ± SD	Median (range)
Gender	Female	11 (91.7%)	
	Male	1 (8.3%)	
Age		33.7 ± 8.64	31 (22-48)
Designation	Doctor	5 (41.7%)	
	Nurse	6 (50%)	
	Pharmacists	1 (8.3%)	
Years of Experience		9.41 ± 5.99	9 (2-20)

174

175 Based on the data collection and thematic analysis, three overarching themes were identified

176 (I) Challenges faced by frontline healthcare providers working in Covid-19 wards; (II)

177 Enablers supporting healthcare providers to deal with Covid-19 pandemic; and (III)

178 Recommendations to support healthcare workforce during the Covid-19 crisis. The themes and

179 categories are presented in Table 2.

180 Table 2: Themes and categories

Themes	Categories
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Challenges faced by frontline healthcare providers working in Covid-19 wards	<ul style="list-style-type: none"> • Concerns about management of Covid-19 cases • Fear of acquiring infection and transmitting to family members • Overwhelmed and exhausted by the workload and exhaustive donning and doffing process • Stigma associated with healthcare providers working in Covid-19 wards
Enablers supporting healthcare providers to deal with Covid-19 pandemic	<ul style="list-style-type: none"> • A safe and secured hospital environment • Adequate trainings and drills for dealing with Covid-19 cases • Strong hospital system of information sharing during Covid-19 crisis • Supportive management and leadership
Recommendations to support healthcare workforce during the Covid-19 crisis	<ul style="list-style-type: none"> • Prepare and train, backup health workforce • Ensuring motivation for frontline health workforce • Anticipate and address the mental health needs of the health workforce

181

182 **Themes 1: Challenges faced by frontline healthcare providers working in Covid-19 wards**

- 183 • *Concerns about management of Covid-19 cases*

184 While front line HCPs and senior management expressed their determination to offer services
 185 in these challenging times to manage Covid-19 patients, various concerns related to the
 186 treatment and management of Covid-19 cases were articulated. Dialogues with hospital senior
 187 management representatives indicated that standard operating procedures (SOPs) have been
 188 designed to manage Covid-19 cases, however, few frontlinecare providers believed that the
 189 presence of SOPs is fairly ambiguous. Expressing similar concerns, a pharmacist stated:

190

191 *“I have concerns about how to deal with patients ... We need a clear procedure for*
192 *dealing with them. For example, when someone comes into the pharmacy, what*
193 *procedures are we meant to follow” (IDI-08, Pharmacist).*

194

195 During interviews, an insight into the initial practices of managing Covid-19 crisis was also
196 probed. Senior hospital management mentioned that the hospital was fully prepared to manage
197 this public health emergency since its epidemic in China. Contrary to this, front line physicians
198 and nurses verbalized glimpses of an ad hoc management of outpatient hospital area for Covid-
199 19 screening and testing, during the early phase of the pandemic. Furthermore, on one hand,
200 senior management generally exhibited their satisfaction over the availability and provision of
201 PPEs to front line health care providers. While on the other hand, shortages of PPEs were
202 notified by few health care providers, alongside sanitizers while providing care to the patients.

203

204 *“Sometimes we face shortage of sanitizers and other essential PPEs such as masks. I*
205 *think that all the PPEs should be available at all times so that we are not worried.*
206 *Sometimes doctors ask us to bring them a N95 mask and we are unable to do so*
207 *because we do not have any” (IDI-02, Nurse)*

208

209 Although, respondents appreciated the availability of negative pressure rooms during Covid-
210 19 pandemic, concerns about the limited capacity of the hospital were verbalized for the
211 efficient and timely management of Covid-19 cases. Few hospital staff reported that they
212 experienced violent behaviour by the family in case of refusal to admit new patients.

213 • *Fear of acquiring infection and transmitting to family members*

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3 214 Due to the highly contagious nature of the coronavirus (SARS-CoV-2) and perceived
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5 215 uncertainty in contracting the disease, interviews with physicians and nurses revealed their
6
7 216 apprehension in acquiring the virus while treating patients. The frontline workers face a unique
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9
10 217 mental health challenge and several respondents experienced feeling guilty about potentially
11
12 218 carrying the virus to their families. Highlighting this point, one respondent stated:

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18 220 *“It is a stressful situation. By the end of the day when I am taking a break, I have*
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20 221 *many negative thoughts. I worry about carrying this infection to my family...I have a*
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22 222 *young daughter at home and nearly every day I worry about being asymptomatic and*
23
24 223 *carrying this infection to my family” (IDI-07, Doctor).*

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30 225 The increased likelihood of contracting Covid-19 is also psychologically affecting the senior
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32 226 management team across the hospital. Due to their exposure; their family members are also at
33
34 227 risk of acquiring the infection.

36
37 228 *“I work in the emergency department so I always have a fear that the next patient I*
38
39 229 *see will need serious treatment and I may have to resuscitate him/her. But now, I*
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41 230 *always have a fear that the next patient will be Covid-19 positive and that they may*
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43 231 *infect me. And if I get infected my family will get infected. So, this fear is a little bit*
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45 232 *different and it will last till the pandemic last” (IDI-12, Doctor)*

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52 234 While verbalizing the concerns about the HCPs exposure in getting infected, respondents also
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54 235 voiced their concerns that front line staff is at high risk of getting infected even in non-Covid-
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56 236 19 areas across the hospital setting.

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3 238 • *Overwhelmed and exhausted by the workload and exhaustive donning and doffing*
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5 239 *process*
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8 240 In order to protect frontline workers against Covid-19, the infection control policy at AKUH
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10 241 mandates that all staff working in areas where Covid-19 patients are suspected wear a full
11
12 242 sleeve impervious gown, gloves, and a N95 mask. While this policy is no doubt effective and
13
14 243 in line with the best interest of the frontline workers, it poses several challenges. For instance,
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16 244 our interviews revealed that several participants found the N95 mask suffocating to wear for a
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18 245 prolonged period of time. Commenting on the experience of wearing full PPE one frontline
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20 246 worker stated:
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27 248 *“We...get tired of wearing full PPE because we have to be in the room with the patient*
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29 249 *for four hours. It gets really hot and the extra layers of protection weigh heavy on the*
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31 250 *body” (IDI-11, Nurse).*
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37 252 Moreover, another respondent highlighted how the process of using PPE is complicated when
38
39 253 staff are required to visit one patient to another. This occurs because the staff have to
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41 254 meticulously switch in and out of PPEs. Therefore, what was initially a mundane process has
42
43 255 now become a critical aspect of infection control. This point was illustrated by a respondent
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45 256 who stated:
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52 258 *“It takes around 5-7 minutes to put on our PPEs. We then go to the patient's room...*
53
54 259 *come back and spend the same amount of time to switch our PPEs before going to the*
55
56 260 *next patient room. This process is a big hassle and is time consuming. But we have to*
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3 261 *be extra careful, if this procedure is not done properly, we can pass on the infection”*

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5 262 *(IDI-07, Doctor).*

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11 264 While this process is no doubt challenging, one respondent offered an encouraging remark
12
13 265 stating:

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16 266 *“Initially we felt that our workload has increased, however, with the passage of time*

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18 267 *we have become used to it and things feel normal” (IDI-16, Nurse).*

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24 269 • *Stigma associated with healthcare providers working in Covid-19 wards*

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26 270 Covid-19 is primarily transmitted from symptomatic people to others through direct contact,

27
28 271 or by contact with contaminated objects and surfaces. Moreover, a large portion of those

29
30 272 infected are asymptomatic, meaning they show no overt markers of the infection. As a result

31
32 273 of this, frontline workers face a unique mental health challenge. Since they work in high risk

33
34 274 environments many opt to hide details about their work life in fear of being stigmatized by their

35
36 275 communities.

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43 277 *“I know that in some cases health care workers do not tell their families and*

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45 278 *communities that they are working with Covid-19 patients. They fear that this will*

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47 279 *cause unnecessary panic and people may view them differently” (KII-19, Associate*

48
49 280 *Professor).*

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55 282 It is likely that this anxiety within the families and communities of health care workers is

56
57 283 propagated by the ambiguity of information available on Covid-19. It is possible that the

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3 284 hospital may address many of these issues by extending its outreach services. During the
4
5 285 interviews, a frontline worker was critical of the hospitals current outreach services:
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10 287 *“Our services should be extended to the community. Compared to other institutions*
11
12 288 *we have not done enough. Many people have criticized us in this pandemic” (IDI-08,*
13
14 289 *Pharmacist).*

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18 290 By providing more extensive services to surrounding communities, the hospital could not only
19
20 291 alleviate the stigma faced by front line workers, but also reduce the surge of false information.
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25 294 **Theme 2: Enablers supporting healthcare providers to deal with Covid-19 pandemic**

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- 27 296 • *A safe and secured hospital environment*

28 297 Many respondents stated that the hospital has provided a safe environment for employees, and
29
30 298 that safety measures have been improved as the hospital administration became more
31
32 299 knowledgeable about the nature of this disease. One respondent stated the hospital’s disaster
33
34 300 management and incident command system were ensuring adequate training and smooth
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36 301 communication throughout the hospital.
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49 303 *When the number of cases started increasing, the hospital enacted the Hospital*
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51 304 *Incident Command System, leaders from each of the different areas i.e. logistics,*
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53 305 *communications, medicine, etc came together to make sure that everything was in*
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55 306 *place- . The hospital has now made smaller groups which meet regularly to go over*
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3 307 *each of the issues and an executive Operations Command Committee goes over what*
4
5 308 *should be done.” (KII-19, Associate Professor)*
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11 310 While provisions are made for availability of PPE for the staff, many noted that implementation
12
13 311 of proper usage of PPE and adequate hand hygiene is still a problem that requires behavioral
14
15 312 change . It was also stated that health care providers that are considered vulnerable (i.e. elderly
16
17 313 and/or have serious pre-existing conditions) are not allowed to work in the Covid-19
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19 314 established areas.
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21

22 315

23
24 316 While several precautions are being taken, one respondent claimed that there were many places
25
26 317 for improvement. One stated that it is complacent to feel good about any sense of safety and
27
28 318 security, and that it is important to remain vigilant in the case of new information about the
29
30 319 disease or a high influx of patients.
31
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37 321 *“There are several places where things can slip through the cracks, and cause*
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39 322 *problems, and there are several points that will fail if they come under pressure- I am*
40
41 323 *not absolutely confident, but it is good so far.” (KII- 16, Professor)*
42
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44 324

- 45
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47 325 • *Adequate trainings and drills for dealing with Covid-19 cases*
48

49 326 When questioned about trainings and drills, most respondents stated that everyone who is
50
51 327 working for Covid-19 is trained in the usage of PPE, N95 mask, donning and doffing, and
52
53 328 taking test samples using nasopharyngeal swabs. Many also said that regular training was being
54
55 329 carried out on the job and at the CIME, and that master trainers were being trained to then
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3 330 disseminate information and train the rest of the department. Covinars (Covid Webinar)
4
5 331 sessions are being conducted to help train and provide information about the disease.
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11 333 *We have completed 2-day training workshops or seminars and get trained every day*
12
13 334 *in new technologies and when new guidelines come” (IDI-02, Nurse)*
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16 335
17
18 336 However, some specialists were concerned that very little had been done in the way of training;
19
20 337 it was noted that besides guidance on N95 mask fitting test, there were no opportunities to go
21
22 338 through any drills. While communications were being carried out, it was not considered
23
24 339 sufficient. Others said that while trainings were being conducted, they were not very regular.
25
26 340 While they stated that this may be because of the social distancing measures, they insisted on
27
28 341 more regular online trainings.
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35 343 • *Strong hospital system of information sharing during Covid-19 crisis*

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37 344 While the outbreak of Covid-19 has put immense pressure and stress on the hospital staff, there
38
39 345 are many facilitators that support the hospital staff to deal with the pandemic. Respondents
40
41 346 stated that information was being shared through video messages and that helplines and
42
43 347 hotlines for staff and the public were effective in screening for Covid-19 symptoms. While
44
45 348 many stated that information sharing was difficult at first, it was claimed that this was due to
46
47 349 the changing information coming about the disease from international agencies It was
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49 350 reported that the hospital leadership holds weekly meetings with senior management, who then
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51 351 circulate that within their respective departments.
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4 353 *“I think we have a reasonably good system built for disaster and we have a very*
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6 354 *defined chair of command... There have been different working groups formed for*
7
8 355 *Covid-19 and they all have specialized tasks for information sharing, and there is a*
9
10 356 *Covid-19 hotline for employees and the public and that is adequate.” (KII-16,*
11
12 357 *Professor)*

16 358
17
18 359 In addition, university-wide town hall meetings were held regularly. It was suggested that more
19
20 360 town halls should be carried out, and that regular memos should be sent with information about
21
22 361 caring for those with the disease.
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28 363 *“Town halls boosted the morale of the health care providers, and this communication*
29
30 364 *was very good.” (KII-3, Professor)*

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36 366 • *Supportive management and leadership*

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39 367 Most in-depth interview participants mentioned that senior management and institutional
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41 368 leadership is providing immense support by ensuring appropriate provision of protective
42
43 369 equipment (PPE) in the Covid-19 and non Covid-19 wards to ensure safety of frontline
44
45 370 healthcare providers. In addition, few participants mentioned that the institutional leadership
46
47 371 regularly visit Covid-19 units for staff appreciation and encouragement. Besides, the senior
48
49 372 management responds to healthcare providers concerns in a timely manner through a
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51 373 WhatsApp group.
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4 375 *“Initially, we were supposed to remain inside the patient room consecutively for 4*
5
6 376 *hours. This was very exhausting for bedside nurses especially since we have to wear*
7
8 377 *three layers of PPE. We raised these concerns and senior management has now*
9
10 378 *permitted us to exit the room when the patients condition gets stable ... we now*
11
12 379 *observe the patients from the mirrored door. This has given us a huge relief” (IDI-*
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14 380 *11, Nurse)*

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21 382 While frontline providers appreciated the support received from management and institutional
22
23 383 leadership, they also recognized the efforts of all other support departments who are working
24
25 384 together for safety of frontline hospital staff. These support departments include finance, design
26
27 385 office, construction, laundry, purchase and supply chain management, safety and security,
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29 386 human resource, information and technology department, nutrition and food services,
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31 387 marketing and communications, travel services, etc.

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37 389 *“All the support departments are contributing in the same manner as our frontline*
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39 390 *healthcare providers” (KII-01, Professor)*

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43 392 In addition, the few IDI participants mentioned that institutional leadership has arranged
44
45 393 accommodation facilities for the frontline staff who are working in Covid-19 wards but the
46
47 394 hospital staff is not availing those services because they have their families and children back
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49 395 home. Few respondents further stated that the senior management has also ensured the
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51 396 provision of shower facilities for the frontline hospital staff; however due to time limitations
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53 397 nurses are unable to make effective use of those facilities.

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3 399 **Theme 3: Recommendations to support healthcare workforce during the Covid-19 crisis.**

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8 401 • *Prepare and train, backup health workforce*

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10 402 Both IDI and KII participants mentioned that they have been experiencing staff shortages in
11
12 403 Covid-19 wards because many of the frontline health care providers have been either
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14 404 quarantined or isolated due to exposure. When asked about recommendations to support
15
16 405 frontline health workforce, most IDI respondents suggested that healthcare providers (doctors
17
18 406 and nurses) of other sub-specialties (neurology, cardiac, surgery, orthopaedic) need to be
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20 407 trained as a backup to mitigate situations when entire internal medicine teams may be placed
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22 408 in self-quarantine due to Covid-19 exposure. In addition, few key-informants recommended
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24 409 that there should be a central backup plan for staff coverage in both Covid-19 and routine
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26 410 wards.
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34 412 *“Currently, only the healthcare providers of Covid-19 wards have received*
35
36 413 *specialized trainings on ventilator code, BIPAP management, and handling body of*
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38 414 *expired Covid-19 patient. However, these trainings should be given to all healthcare*
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40 415 *staff across the institution to prepare a central backup”.* (IDI-03, Nurse)
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46 417 • *Ensuring motivation for frontline health workforce*

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48 418 To ensure enthusiasm among front liners, study respondents highlighted the need of
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50 419 appreciating and motivating frontline providers for their countless efforts in this pandemic
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52 420 battle.
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3 422 Most IDIs including frontline nurses suggested that risk allowance should be given to all
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5 423 frontline healthcare providers involved in treatment and management of Covid-19 patients.
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7 424 Healthcare providers suggested that instead of giving extra time off, hospital staff should be
8
9 425 compensated for taking additional risks, while caring for Covid-19 cases.
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15 427 *As you know the world is very materialistic and people always need motivation. While*
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17 428 *we are being encouraged by senior management, this form of verbal motivation will*
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19 429 *only work for a time period. If the current situation is going to go on, we will need to*
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21 430 *give people an added incentive in the form of material compensation. This can either*
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23 431 *be more money or additional days off (IDI-04, Nurse).*
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30 433 In addition, respondents verbalized that some activities for staff entertainment should also be
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32 434 thought about to alleviate stress and anxiety associated with this crisis situation among
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34 435 healthcare providers.
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39 437 • *Anticipate and address the mental health needs of the health workforce*

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42 438 IDI and KII respondents mentioned that there is no formal platform established where front
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44 439 liners voices are being heard. Such a platform could provide an opportunity to anticipate and
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46 440 address the mental health needs of the frontline health workforce.
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52 442 *Everyone is very stressed. I see it every time one of my staff has to take care of a*
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54 443 *suspected patient, they are hesitant and scared. Sometimes, I feel the same way myself.*
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56 444 *We need an integrated counselling program. People should not just come for*
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58 445 *counselling when they are mentally struggling. Similar to how we have guidelines for*
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3 446 *PPE and social distancing we should have small group talks on ZOOM so that we can*
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5 447 *dispel our anxieties before they build up (KII 06, Associate Professor).*
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11 449 Few study participants particularly KIs appreciated the motivation sessions organized by
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13 450 psychiatric fellows on stress and coping. However, study respondents highlighted the need of
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15 451 arranging more psychiatric sessions for healthcare staff on a daily basis to cope with the stress.
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17 452 More specifically, participants stated that currently there is a blanket approach around mental
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19 453 health; however, more is needed to address varied concerns of the health workforce.
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25 455 *There was a zoom session arranged on stress management, but I was unable to attend*
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27 456 *it due to my duties. I think we need more of these sessions. We can even add more*
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29 457 *innovative things such as breathing exercises, mindfulness, and yoga. There is so*
30
31 458 *much anxiety relating to Covid-19 both at work and in our homes. Everyone is so*
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33 459 *panicked and there is so much hype going around. These types of innovative sessions*
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35 460 *would really help (IDI-05, Doctor)*
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41 42 462 **Discussion**

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45 463 To the best of our knowledge, this is the first study to explore perceptions and experiences of
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47 464 health-care providers during the Covid-19 Pandemic in Pakistan. The research identified
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49 465 challenges faced by healthcare providers while managing Covid-19 patients, alongside
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51 466 strategies to cope with these. The frontline healthcare providers pointed out several concerns
52
53 467 that influenced their ability and willingness to treat and manage Covid-19 patients. These
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55 468 included shortage of PPEs and hand sanitizers, lack of clear SOPs, ad hoc management of
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57 469 hospital outpatient area for Covid-19 screening and testing, violent behavior by families of
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3 470 Covid positive patient, and limited capacity of hospital to treat and manage increasing Covid-
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5 471 19 positive patients. Notwithstanding some challenges that cannot be mitigated by the
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7 472 institution such as the increasing number of Covid positive patients and unexpected violent
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9 473 behavior of families of Covid-19 positive patients, a number of corrective actions that can be
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11 474 taken to lessen the impact of others.
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17 476 Our results highlight, especially in the initial period of the crisis, differences in the responses
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19 477 received from senior management and frontline providers with regard to availability of PPEs
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21 478 and sanitizers, presence of clear SOPs, preparedness of hospital to manage Covid-19 pandemic.
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23 479 These discrepancies could be partly due to the communication gap between the two group of
24
25 480 respondents (whereby senior management and hospital leadership was heavily involved in the
26
27 481 process of designing new screening and testing site, procuring PPE, and updating SOPs
28
29 482 considering the differential progression of the outbreak). Most have now been addressed
30
31 483 through corrective actions by the hospital leadership during the last few weeks and months. As
32
33 484 this is a leading private teaching hospital of the country, the senior management and hospital
34
35 485 leadership was able to successfully address the gaps to improve the experiences of front liners
36
37 486 involved in this pandemic. However, this may not be the case in most public sector hospitals,
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39 487 where front line healthcare workers continue to face challenges. The healthcare systems in
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41 488 LMICs face serious constraints in capacity and accessibility during normal times. This would
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43 489 be aggravated during Covid-19 outbreak, leading to worse clinical outcomes, poor quality
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45 490 healthcare and poor healthcare workers' experiences[18, 19].
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53 492 Consistently with experiences from previous outbreaks and emergencies[18, 20], frontline
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55 493 healthcare workers providing care to Covid-19 patients experienced increased anxiety and
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57 494 stress. Our study found that the increased exhaustion among HCPs is due to the fear of
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3 495 acquiring infection and transmitting it to their family members. Anxiety and burnout among
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5 496 HCPs were also reported by studies conducted in high income countries (HICs) although
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7 497 countries were combating different stages of pandemic[18]. This may be due to standard
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9 498 changes in working hours, shortage in skilled workforce, and inadequate access to PPE[18].
10
11 499 The frontline providers in our study felt overwhelmed due to exhaustive donning and doffing
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13 500 process, intense work, and large number of patients, which was consistent with the studies on
14
15 501 the outbreak of MERS-Cov[21, 22] and Ebola[23]. Our results undoubtedly show that stigma
16
17 502 is a pressing issue for the frontline healthcare workers working in Covid-19 wards. Several
18
19 503 studies have reported that there are several potential mechanisms by which stigma could affect
20
21 504 HCWs outcomes[24, 25], and HCWs who experience higher levels of stigma reported
22
23 505 increased physical (fatigue) and psychological distress (burnout)[26]. These pressures can lead
24
25 506 to mental health problems for example burnout, anxiety, depression, insomnia, denial, anger,
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27 507 which not only influence frontline healthcare providers' attention, understanding, and decision
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29 508 making capacity, but could also have a long-lasting impact on their physical and psychological
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31 509 health after the Covid-19 emergency is over[9].
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40 511 While the outbreak of Covid-19 put immense pressure and stress on the hospital staff, there
41
42 512 were many enabling factors that supported hospital staff to deal with these aspects, which have
43
44 513 progressively evolved over the duration of the pandemic. As a result of this pandemic, the
45
46 514 entire hospital was able to pull together and many departments across the university hospital
47
48 515 coordinated to ensure smooth and efficient operations. Findings suggest that the respondents
49
50 516 felt that they were actively encouraged and supported by senior management and the university
51
52 517 leadership. More specifically, the research subjects felt that over time the safe and secured
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54 518 hospital environment enabled HCPs to perform their routine tasks and reduce their feeling of
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56 519 uncertainty and fear. Similar findings have been reported by the qualitative study published in
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3 520 Lancet Global Health by Qian Liu and colleagues[27]. Our study found that the HCPs were
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5 521 appreciative of the trainings provided to them regarding use of PPE, N95 mask, donning and
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7 522 doffing, and taking test samples using nasopharyngeal swabs. However, it was reported that
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9 523 more drills could be conducted to improve their hand-on skills and reduce the risk of acquiring
10
11 524 infection. Health workforce safety is a high priority and therefore it is essentially important to
12
13 525 provide sufficient protective supplies and trainings and drills for effective management of
14
15 526 Covid-19 cases[27]. A unique yet encouraging finding reported by our study participants was
16
17 527 that the hospital developed a strong system of information sharing to keep faculty and staff
18
19 528 updated about Covid-19 situation through video messages, hotlines, townhalls, and what are
20
21 529 now called Covinars.
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28 531 Our study also reported some recommendations to mitigate current challenges and further
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30 532 improve the experiences of HCPs working in Covid-19 wards. The frontline providers caring
31
32 533 for Covid-19 patients felt extreme physical discomfort and fatigue due to long working hours
33
34 534 and complicated donning and doffing process and suggested that institution should provide risk
35
36 535 allowance to compensate HCPs for the additional risks they take and to motivate staff to
37
38 536 continue to work. This finding is consistent with the previous experience from the outbreak of
39
40 537 Ebola in western Africa, where risk allowance was adopted as a strategy for motivating and
41
42 538 retaining healthcare workers[28]. Our study suggested to prepare and cross-train backup health
43
44 539 workforce to effectively respond to staff shortages as many of the frontline HCPs have been
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46 540 either quarantined or isolated due to exposure. Similar recommendations have been provided
47
48 541 by a number of studies conducted in diverse settings[29-31]. Our study also showed that a
49
50 542 formal platform where front liners voices could be heard did not exist. Respondents reported
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52 543 that such a platform could provide an opportunity to anticipate and address the mental health
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54 544 needs of the frontline health workforce. Experiences from similar outbreaks suggest that early
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3 545 psychological intervention and establishment of early support systems is particularly important
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5 546 for frontliners to promote emotional release and improve HCPs mental health[32].
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10 548 This study was conducted in a leading private tertiary care teaching hospital in Karachi,
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12 549 Pakistan that offers state-of-the-art healthcare. The initial challenges progressively led to a
13
14 550 fairly successful story. The same cannot be said for the large number of public and private
15
16 551 hospitals in the country. The shortage of PPE has been a frequent occurrence and has even led
17
18 552 to public protests, undoubtedly contributing to mental stress and distress. The experience
19
20 553 gained from the current study offers lessons for other hospitals in the country to benefit from.
21
22 554 There is no doubt that good quality healthcare against Covid-19 can only be ensured if the
23
24 555 frontline workers are well taken care of in terms of their mental health and physical needs when
25
26 556 asked to serve critically ill patients round the clock.
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33 558 This study provides an initial evidence base of healthcare providers' experiences of managing
34
35 559 Covid-19 patients in an early stage of pandemic when the participants just accepted the
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37 560 antiepidemic tasks. Diverging from the findings of various studies on the experience of
38
39 561 negative emotions and barriers encountered during outbreak, we found that facilitators coexist
40
41 562 with challenges, which supported front liners to effectively deal with crisis. One of the
42
43 563 limitations of this study was that all study respondents were interviewed online, to minimize
44
45 564 the risk of infection. The authors did not have the opportunity to build rapport with respondents
46
47 565 over Zoom or obtain non-verbal cues during interviews. Secondly, due to the nature of outbreak
48
49 566 prevention, the study was unable to conduct focus group interviews, which would have
50
51 567 provided detailed information about personal and group feelings. In addition, this was a short-
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53 568 term study and does not include long-term experiences of the research subjects with this
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55 569 pandemic.
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5 571 Conclusion:

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8 572 This study provides a holistic view of health-care providers' experiences and emphasizes that
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10 573 adequate trainings and drills, sufficient PPE, a safe and secured hospital environment,
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12 574 healthcare providers motivation, supportive hospital management and leadership, strong
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14 575 hospital system of information sharing and psychological support to address mental health
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16 576 needs of frontliners are necessary to improve the overall experiences of health-care providers
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19 577 fighting Covid-19.
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3 **579 Declaration of interests**
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5 **580 Ethics approval and consent to participate**
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8 **581** Ethical approval for this study was obtained from the Aga Khan University Ethical Review
9
10 **582** Committee (AKU-ERC) – [2020-3694-9056]. Written informed consent was provided by all
11
12 **583** study participants. Informed consent included permission to audio record the interviews and
13
14 **584** use anonymized quotes. Voluntary participation and the right to ask any questions and to
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16 **585** decline participation at any time were emphasized during the data collection.
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19 **586** Consent for publication
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21 **587** Written informed consent for publication was obtained.
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23
24 **588** Competing interests
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26 **589** We declare no competing interests.
27

28
29 **590** Availability of data and materials
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31 **591** The datasets used and/or analysed during the current study are available from the corresponding
32
33 **592** author on reasonable request.
34

35
36 **593** Funding
37

38 **594** This is self-funded research and did not receive any funding.
39

40
41 **595** Authors' contributions
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43 **596** All authors had full access to all the data in this study and take responsibility for the integrity
44
45 **597** of the data and the accuracy of the data analysis. SS, SSQ, ASF, NAP, ZHA, NA designed the
46
47 **598** study. ASF supervised data collection and analysis. ASF, NAP, ZHA, MMS collected the data.
48
49 **599** ASF, NAP, ZHA, MMS, SS analyzed and interpreted the data. ASF, NAP, ZHA, MMS wrote
50
51 **600** the first draft of the manuscript. All authors contributed to reviewing and editing the
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53 **601** manuscript.
54

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8 Karachi, Pakistan: an exploratory qualitative study
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Abstract

Objective: To explore healthcare providers' perspectives and experiences of the barriers and facilitators to treat and manage Covid-19 cases.

Design and Setting: We conducted an exploratory qualitative study using a purposive sampling approach, at a private tertiary care teaching hospital in Karachi, Pakistan. Study data were analyzed manually using the conventional content analysis technique.

Participants: Key-informant interviews (KIIs) were conducted with senior management and hospital leadership and in-depth interviews (IDIs) were conducted with frontline healthcare providers.

Results: A total of 31 interviews (KIIs=19; IDIs=12) were conducted, between April and May 2020. Three overarching themes emerged. The first was 'challenges faced by frontline healthcare providers working in Covid-19 wards. Healthcare workers experienced increased anxiety due to the fear of acquiring infection and transmitting it to their family members. They felt overwhelmed due to the exhaustive donning and doffing process, intense work, and stigmatization. The second theme was 'enablers supporting healthcare providers to deal with the Covid-19 pandemic'. Front liners pointed out several enabling factors that supported hospital staff including a safe hospital environment, adequate training, a strong system of information sharing, and supportive management. The third theme was 'recommendations to support the healthcare workforce during the Covid-19 crisis'. Healthcare workers recommended measures to mitigate current challenges including providing risk allowance to frontline healthcare providers, preparing a backup health workforce, and establishing a platform to address the mental health needs of the healthcare providers.

Conclusion: This study provides an initial evidence base of healthcare providers' experiences of managing Covid-19 patients in the early stage of the pandemic and highlights measures needed to address the encountered challenges. It offers lessons for hospitals in low-middle-

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3 51 income countries to ensure a safe working environment for frontline workers in their fight
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5 52 against Covid-19.

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8 53 **Keywords:** Covid-19, healthcare providers experiences, exploratory qualitative study,
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10 54 Pakistan

11
12 55 **Strengths and limitations of this study**

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14
15 56 • The frontline healthcare workers are uniquely positioned to address some of the most pressing
16
17 57 issues related to the Covid-19 pandemic; thus, this study is positioned well to explore
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19 58 experiences of the barriers and facilitators to treat and manage Covid-19 cases.
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21 59 • One limitation is that to minimize the risk of infection all study respondents were interviewed
22
23 60 online over Zoom and hence the authors did not have the opportunity to build rapport with the
24
25 61 respondents or obtain non-verbal cues during interviews.
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27 62 • The study was unable to conduct focus group interviews, due to the nature of outbreak
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29 63 prevention, which would have provided in-depth information about personal and group
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31 64 feelings.
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65 **Background**

66 Countries around the world are facing the unprecedented challenge and are struggling to cope
67 with the Covid-19 pandemic[1]. First discovered in Wuhan, China; Covid-19 has swiftly
68 traveled borders over the last couple of months leaving a trail of high morbidity and mortality
69 with devastating effect on economies[2]. As of June 22, 2020, there have been 9,071,341
70 confirmed cases globally, with 471,162 deaths[3]. Moreover, 181,088 Covid-19 cases and
71 3,590 deaths have been reported in Pakistan[4].

72 Pakistan shares borders with China and Iran; one being the epicenter of the disease and the
73 other has seen an exponential increase of cases, respectively[5]. The rapidly evolving pandemic
74 has stressed the entire healthcare system of Pakistan and outpaced the capacity of hospitals to
75 meet the demand for vital medical resources, such as ventilators, intensive care units (ICU)
76 beds, and personal protective equipment (PPE) [5]. The hospitals in Pakistan are in the midst
77 of responding to the pandemic and are adopting urgent and innovative approaches. These
78 include aspects such as: setting up designated isolation wards for patients diagnosed with
79 Covid-19, procuring and distributing PPE, conducting screening and performing diagnostic
80 tests, delaying non-emergency procedures, and shifting from onsite to tele-consultation out-
81 patientservices[4, 5].

82 Since the time Covid-19 has hit countries, scientific evidence is clustering more around
83 understanding the disease transmission and its pathogenicity. While disease epidemiology is
84 important to understand the spread and risk factors, there is also a need to explore and
85 understand experiences and perceptions of the health workforce involved in the Covid-19
86 crisis[6]. As the numbers are increasing, healthcare providers around the world are playing a
87 central role and are making great contributions, while simultaneously facing great
88 challenges[7]. The frontline healthcare workers across the world are uniquely positioned to
89 address some of the most pressing issues related to the Covid-19 pandemic such as: physical

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3 90 burnout due to increase workload, mental exhaustion, fear of becoming infected and infecting
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5 91 others, sense of helplessness due to unavailability of personal protective gear, etc[8, 9].
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7 92 Experiences from previous epidemics showed that while healthcare workers are often resilient,
8
9 93 they require the same physical, psychological, and social support as others in times of
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11 94 turmoil[10-14]. Initial research into the physical, emotional, and psychological effects of
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13 95 Covid-19 on the health workforce managing Covid-19 patients in Wuhan showed that intensive
14
15 96 work tends to drain frontline healthcare providers physically and emotionally[7, 14].
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17 97 It is, therefore, significant to not only look to our current scientific knowledge but also to collect
18
19 98 and interpret data on the specific ways this outbreak influences our frontline healthcare
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21 99 workers. This crisis situation necessitates investigating healthcare providers' perspectives and
22
23 100 experiences of the barriers and facilitators to treat and manage Covid-19 cases. This study
24
25 101 provides an understanding of the factors that are necessary to improve the experiences of
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27 102 healthcare providers dealing with the Covid-19 pandemic.
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33 **Methods** *Study design and setting*

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35 104 This formative research employed an exploratory qualitative research design using semi-
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37 105 structured interviews and a purposive sampling approach. The study was conducted at the
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39 106 private tertiary care teaching hospital in Karachi, Pakistan.
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45 108 *Data Collection Methods and study participants*

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47 109 The data collection methods for this formative research included key-informant interviews
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49 110 (KIIs) and in-depth interviews (IDIs). Key informants were purposively identified and
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51 111 recruited from senior management and hospital leadership, directly or indirectly involved with
52
53 112 the management of Covid-19 patients. Similarly, participants for In-depth interviews were also
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55 113 purposively recruited and included frontline healthcare providers, directly involved in the care
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57 114 of Covid-19 patients such as doctors, nurses, and pharmacists.
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116 *Data Collection Procedure*

117 Semi-structured interview guides were designed for KIIs and IDIs. The interview guides for
118 KIIs and IDIs are provided in online supplemental annexes 1 and 2. The interview involved a
119 discussion on perceptions about the Covid-19 outbreak, along with the barriers and facilitators
120 experienced by healthcare providers while caring for Covid-19 patients. The interview guides
121 were pilot tested with a non-study sample (2 KIIs & 2 IDIs) with the same characteristics as
122 the study sample. The pilot testing offered evidenced-base guidance to improve data collection
123 guides. Before beginning the interview, the study investigators explained the study objectives
124 and procedures to eligible healthcare providers and obtained informed consent for their
125 participation in the study. Trained researchers, experienced in qualitative research, conducted
126 online interviews using Zoom. The interviews were conducted in the languages of English
127 and/or Urdu. Study participants were assured that their anonymity will be maintained. Informed
128 consent was also obtained for notetaking and audio-recording of the interview.

129 Key-informant interviews (KIIs)

130 A total of 19 KIIs were conducted with senior management and hospital leadership. These KIIs
131 were conducted to understand the barriers and facilitators faced while managing Covid-19
132 cases at Aga Khan University Hospital (AKUH). The key informants were electronically
133 invited to participate in the qualitative study. Each KII took approximately between 30 and 45
134 minutes.

135 In-Depth Interviews (IDIs)

136 IDIs were conducted with frontline healthcare providers including doctors, nurses, and
137 pharmacists who were directly involved in caring for Covid-19 patients. A total of 12 IDIs
138 interviews were conducted with a group of frontline healthcare providers. The healthcare
139 providers were identified from the AKUH Covid-19 in-patient wards and out-patient screening

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3 140 and testing areas. Frontline healthcare providers were electronically invited to participate in
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5 141 their off-duty hours. Each IDI took approximately between 30 and 45 minutes.
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8 142 *Data analysis*

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10 143 Study data were analyzed manually using the conventional content analysis technique[15].
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12 144 Firstly, the audio recordings from the interviews were transcribed and then translated into the
13
14 145 English language. No identifying characteristics were included in the transcriptions.
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16 146 Transcripts were read several times by four research investigators to develop an interpretation
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18 147 of the perspectives and experiences of the barriers and facilitators to treat and manage Covid-
19
20 148 19 cases. This involved an iterative process where data were coded, compared, contrasted, and
21
22 149 refined to generate emergent themes. The transcribed text was divided into ‘meaning units’
23
24 150 which were later shortened and labeled with a ‘code’ without losing the study context. Codes
25
26 151 were then analyzed and grouped into similar categories. In the final step, similar categories
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28 152 were assembled under sub-themes and main themes. Two independent investigators (NAP and
29
30 153 ASF) performed the coding, and category creation and discrepancies were resolved through
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32 154 discussion until a consensus was reached.
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37 155 *Trustworthiness of the Study:*

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39 156 Tracy et al. [16] and Lincoln and Guba's criteria [17] were used to establishing trustworthiness
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41 157 and methodological rigor. To ensure credibility, the study triangulated data via two basic types
42
43 158 of triangulation: data source triangulation (exploring insights of different groups- healthcare
44
45 159 providers and key-informants) and investigator triangulation (use of multiple researchers in
46
47 160 analysis phase -NAP & ASF)[18]. Study rigor was also be enhanced through member checking
48
49 161 of transcripts and synthesized data to confirm whether study results have resonance with the
50
51 162 participants’ experience[19]. Since our study used a qualitative approach, it was more
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53 163 interested in gaining an understanding of providers’ experiences of Covid-19 management
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55 164 rather than aiming at singular truth and generalization. Patton and Rolfe emphasize that the
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3 165 qualitative inquiry often prioritize depth over breadth through studying smaller samples and
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5 166 even single case and often makes very limited claims about the study external validity[20, 21].
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8 167 *Ethical considerations*

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10 168 Ethical approval for this study was obtained from the Aga Khan University Ethical Review
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12 169 Committee (AKU-ERC) – [2020-3694-9056].
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14 170 *Patient and Public Involvement*

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16 171 Patient public involvement is a relatively new concept in Pakistan. Our data collection tool was
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18 172 piloted through two IDIs to ensure that it is inclusive and comprehensive. Frontline healthcare
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20 173 providers were not involved in the development of research questions and design, and data
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22 174 collection decisions.
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26 175 **Results**

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28 176 In this qualitative study, 19 KIIs and 12 IDIs were conducted, between April and May 2020,
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30 177 with a variety of participants including, residents, registered nurses, head nurses, nurse
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32 178 managers, pharmacists, senior management, and few key individuals from leadership positions.
33
34 179 Data collection was ceased once saturation was achieved; saturation refers to the point in the
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36 180 research process when no new information is discovered in data analysis[22]The small number
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38 181 of qualitative interviews allowed us to dug into the depth of each interview to understand the
39
40 182 unique perspectives and experiences of healthcare providers regarding Covid-19. The
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42 183 demographic information for the KIIs and IDIs participants is illustrated in Table 1. All the
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44 184 study participants (n=31) who were approached by the study team agreed to participate in the
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46 185 study.
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51 186 Table 1: Characteristics of KII and IDI Study Participants (KII=19; IDI=12)
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Characteristics of KII participants		N (%) or Median (range)
Gender	Female	11 (57.9%)

	Male	8 (42.1%)
Age		45 (34-58)
Designation	Professor	5 (26.3%)
	Associate professor	7 (36.8%)
	Assistant professor	2 (10.5%)
	Manager	3 (15.8%)
	Leadership role	2 (10.5%)
Years of Experience		19 (1-45)

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Characteristics of IDI participants		N (%) or Median (range)
Gender	Female	11 (91.7%)
	Male	1 (8.3%)
Age		31 (22-48)
Designation	Doctor	5 (41.7%)
	Nurse	6 (50%)
	Pharmacists	1 (8.3%)
Years of Experience		9 (2-20)

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191 Based on the data collection and thematic analysis, three overarching themes were identified

192 (I) Challenges faced by frontline healthcare providers working in Covid-19 wards; (II)
 193 Enablers supporting healthcare providers to deal with Covid-19 pandemic; and (III)
 194 Recommendations to support healthcare workforce during the Covid-19 crisis. The themes and
 195 categories are presented in Table 2.

196 Table 2: Themes and categories

Themes	Categories
Challenges faced by frontline healthcare providers working in Covid-19 wards	<ul style="list-style-type: none"> • Concerns about the management of Covid-19 cases • Fear of acquiring infection and transmitting to family members • Overwhelmed and exhausted by the workload and exhaustive donning and doffing process • The stigma associated with healthcare providers working in Covid-19 wards

Enablers supporting healthcare providers to deal with Covid-19 pandemic	<ul style="list-style-type: none"> • A safe and secured hospital environment • Adequate training and drills for dealing with Covid-19 cases • The strong hospital system of information sharing during the Covid-19 crisis • Supportive management and leadership
Recommendations to support healthcare workforce during the Covid-19 crisis	<ul style="list-style-type: none"> • Prepare and train backup health workforce • Ensuring motivation for frontline health workforce • Anticipate and address the mental health needs of the health workforce

Themes 1: Challenges faced by frontline healthcare providers working in Covid-19 wards

- *Concerns about the management of Covid-19 cases*

While front-line healthcare providers and senior management expressed their determination to offer services in these challenging times to manage Covid-19 patients, various concerns related to the treatment and management of Covid-19 cases were articulated. Dialogues with hospital senior management representatives indicated that standard operating procedures (SOPs) have been designed to manage Covid-19 cases, however, few frontline care providers believed that the presence of SOPs is fairly ambiguous. Expressing similar concerns, a pharmacist stated:

“I have concerns about how to deal with patients ... We need a clear procedure for dealing with them. For example, when someone comes into the pharmacy, what procedures are we meant to follow” (IDI-08, Pharmacist).

During interviews, an insight into the initial practices of managing the Covid-19 crisis was also probed. Senior hospital management mentioned that the hospital was fully prepared to manage

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3 213 this public health emergency since its epidemic in China. Contrary to this, front-line physicians
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5 214 and nurses verbalized glimpses of an ad hoc management of outpatient hospital areas for
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8 215 Covid-19 screening and testing, during the early phase of the pandemic. Furthermore, on one
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10 216 hand, senior management generally exhibited their satisfaction over the availability and
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12 217 provision of PPEs to front-line health care providers. While on the other hand, shortages of
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14 218 PPEs were notified by few health care providers, alongside sanitizers while providing care to
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17 219 the patients.
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22 221 *“Sometimes we face a shortage of sanitizers and other essential PPEs such as masks.*

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24 222 *I think that all the PPEs should be available at all times so that we are not worried.*

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26 223 *Sometimes doctors ask us to bring them an N95 mask and we are unable to do so*

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28 224 *because we do not have any” (IDI-02, Nurse)*
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34 226 Although respondents appreciated the availability of negative pressure rooms during the Covid-
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36 227 19 pandemic, concerns about the limited capacity of the hospital were verbalized for the
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38 228 efficient and timely management of Covid-19 cases. Few hospital staff reported that they
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40 229 experienced violent behavior by the family in case of refusal to admit new patients.
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44 230 • *Fear of acquiring infection and transmitting to family members*

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46 231 Due to the highly contagious nature of the coronavirus (SARS-CoV-2) and perceived
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48 232 uncertainty in contracting the disease, interviews with physicians and nurses revealed their
49
50 233 apprehension in acquiring the virus while treating patients. The frontline workers face a unique
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52 234 mental health challenge and several respondents experienced feeling guilty about potentially
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54 235 carrying the virus to their families. Highlighting this point, one respondent stated:
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4 237 *“It is a stressful situation. By the end of the day when I am taking a break, I have*
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6 238 *many negative thoughts. I worry about carrying this infection to my family...I have a*
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8 239 *young daughter at home and nearly every day I worry about being asymptomatic and*
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10 240 *carrying this infection to my family” (IDI-07, Doctor).*
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16 242 The increased likelihood of contracting Covid-19 is also psychologically affecting the senior
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18 243 management team across the hospital. Due to their exposure; their family members are also at
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20 244 risk of acquiring the infection.
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24 245 *“I work in the emergency department so I always have a fear that the next patient I*
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26 246 *see will need serious treatment and I may have to resuscitate him/her. But now, I*
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28 247 *always have a fear that the next patient will be Covid-19 positive and that they may*
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30 248 *infect me. And if I get infected my family will get infected. So, this fear is a little bit*
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32 249 *different and it will last till the pandemic last” (IDI-12, Doctor)*
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39 251 While verbalizing the concerns about the healthcare providers' exposure in getting infected,
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41 252 respondents also voiced their concerns that front line staff is at high risk of getting infected
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43 253 even in non-Covid-19 areas across the hospital setting.
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48 255 • *Overwhelmed and exhausted by the workload and exhaustive donning and doffing process*

50 256 To protect frontline workers against Covid-19, the infection control policy at AKUH mandates
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52 257 that all staff working in areas where Covid-19 patients are suspected wear a full sleeve
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54 258 impervious gown, gloves, and an N95 mask. While this policy is no doubt effective and in line
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56 259 with the best interest of the frontline workers, it poses several challenges. For instance, our
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58 260 interviews revealed that several participants found the N95 mask suffocating to wear for a
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3 261 prolonged period of time. Commenting on the experience of wearing full PPE one frontline
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5 262 worker stated:

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11 264 *“We...get tired of wearing full PPE because we have to be in the room with the patient*
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13 265 *for four hours. It gets really hot and the extra layers of protection weigh heavy on the*
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15 266 *body” (IDI-11, Nurse).*

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21 268 Moreover, another respondent highlighted how the process of using PPE is complicated when
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23 269 staff is required to visit one patient to another. This occurs because the staff has to meticulously
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25 270 switch in and out of PPEs. Therefore, what was initially a mundane process has now become a
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27
28 271 critical aspect of infection control. This point was illustrated by a respondent who stated:

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33 273 *“It takes around 5-7 minutes to put on our PPEs. We then go to the patient's room...*
34
35 274 *come back and spend the same amount of time to switch our PPEs before going to the*
36
37 275 *next patient's room. This process is a big hassle and is time-consuming. But we have*
38
39 276 *to be extra careful, if this procedure is not done properly, we can pass on the*
40
41 277 *infection” (IDI-07, Doctor).*

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48 279 While this process is no doubt challenging, one respondent offered an encouraging remark
49
50 280 stating:

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53 281 *“Initially we felt that our workload has increased, however, with the passage of time*
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55 282 *we have become used to it and things feel normal” (IDI-16, Nurse).*

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3 284 • *The stigma associated with healthcare providers working in Covid-19 wards*
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6 285 Covid-19 is primarily transmitted from symptomatic people to others through direct contact,
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8 286 or by contact with contaminated objects and surfaces. Moreover, a large portion of those
9
10 287 infected is asymptomatic, meaning they show no overt markers of the infection. As a result of
11
12 288 this, frontline workers face a unique mental health challenge. Since they work in high-risk
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14 289 environments many opt to hide details about their work-life in fear of being stigmatized by
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16
17 290 their communities.
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22 292 *“I know that in some cases health care workers do not tell their families and*
23
24 293 *communities that they are working with Covid-19 patients. They fear that this will*
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26 294 *cause unnecessary panic and people may view them differently” (KII-19, Associate*
27
28 295 *Professor).*
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34
35 297 It is likely that this anxiety within the families and communities of health care workers is
36
37 298 propagated by the ambiguity of information available on Covid-19. It is possible that the
38
39 299 hospital may address many of these issues by extending its outreach services. During the
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41
42 300 interviews, a frontline worker was critical of the hospital’s current outreach services:
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44 301

47 302 *“Our services should be extended to the community. Compared to other institutions*
48
49 303 *we have not done enough. Many people have criticized us in this pandemic” (IDI-08,*
50
51 304 *Pharmacist).*
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55 305 By providing more extensive services to surrounding communities, the hospital could not only
56
57 306 alleviate the stigma faced by front-line workers but also reduce the surge of false information.
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5 309 **Theme 2: Enablers supporting healthcare providers to deal with Covid-19 pandemic**6
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- 10 311 •
- A safe and secured hospital environment*

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12 312 Many respondents stated that the hospital has provided a safe environment for employees and
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14 313 that safety measures have been improved as the hospital administration became more
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16 314 knowledgeable about the nature of this disease. One respondent stated the hospital's disaster
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18 315 management and incident command system were ensuring adequate training and smooth
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20 316 communication throughout the hospital.
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27 318 *When the number of cases started increasing, the hospital enacted the Hospital*
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29 319 *Incident Command System, leaders from each of the different areas i.e. logistics,*
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31 320 *communications, medicine, etc came together to make sure that everything was in*
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33 321 *place-. The hospital has now made smaller groups which meet regularly to go over*
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35 322 *each of the issues and an executive Operations Command Committee goes over what*
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37 323 *should be done.” (KII-19, Associate Professor)*
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44 325 While provisions are made for the availability of PPE for the staff, many noted that
45
46 326 implementation of proper usage of PPE and adequate hand hygiene is still a problem that
47
48 327 requires behavioral change. It was also stated that health care providers that are considered
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50 328 vulnerable (i.e. elderly and/or have serious pre-existing conditions) are not allowed to work in
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52 329 the Covid-19 established areas.
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3 331 While several precautions are being taken, one respondent claimed that there were many places
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5 332 for improvement. One stated that it is complacent to feel good about any sense of safety and
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7 333 security and that it is important to remain vigilant in the case of new information about the
8
9 334 disease or a high influx of patients.
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335

15 336 *“There are several places where things can slip through the cracks, and cause*
16
17 337 *problems, and there are several points that will fail if they come under pressure- I am*
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19 338 *not absolutely confident, but it is good so far.” (KII- 16, Professor)*
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-
- 26 340 • *Adequate training and drills for dealing with Covid-19 cases*

28 341 When questioned about training and drills, most respondents stated that everyone who is
29
30 342 working for Covid-19 is trained in the usage of PPE, N95 mask, donning and doffing, and
31
32 343 taking test samples using nasopharyngeal swabs. Many also said that regular training was being
33
34 344 carried out on the job and at the CIME, and that master trainers were being trained to then
35
36 345 disseminate information and train the rest of the department. Covinars (Covid Webinar)
37
38 346 sessions are being conducted to help train and provide information about the disease.
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45 348 *We have completed 2-day training workshops or seminars and get trained every day*
46
47 349 *in new technologies and when new guidelines come” (IDI-02, Nurse)*
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52 351 However, some specialists were concerned that very little had been done in the way of training;
53
54 352 it was noted that besides guidance on the N95 mask fitting test, there were no opportunities to
55
56 353 go through any drills. While communications were being carried out, it was not considered
57
58 354 sufficient. Others said that while training were being conducted, they were not very regular.
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3 355 While they stated that this may be because of the social distancing measures, they insisted on
4
5 356 more regular online training.
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10 358 • *The strong hospital system of information sharing during the Covid-19 crisis*

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12 359 While the outbreak of Covid-19 has put immense pressure and stress on the hospital staff, many
13
14 360 facilitators support the hospital staff to deal with the pandemic. Respondents stated that
15
16 361 information was being shared through video messages and that helplines and hotlines for staff
17
18 362 and the public were effective in screening for Covid-19 symptoms. While many stated that
19
20 363 information sharing was difficult at first, it was claimed that this was due to the changing
21
22 364 information coming about the disease from international agencies It was reported that the
23
24 365 hospital leadership holds weekly meetings with senior management, who then circulate that
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26 366 within their respective departments.
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34 368 *“I think we have a reasonably good system built for disaster and we have a very*
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36 369 *defined chair of command... There have been different working groups formed for*
37
38 370 *Covid-19 and they all have specialized tasks for information sharing, and there is a*
39
40 371 *Covid-19 hotline for employees and the public and that is adequate.” (KII-16,*
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42 372 *Professor)*
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48 374 In addition, university-wide town hall meetings were held regularly. It was suggested that more
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50 375 town halls should be carried out and that regular memos should be sent with information about
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52 376 caring for those with the disease.
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378 *“Town halls boosted the morale of the health care providers, and this communication*
379 *was very good.” (KII-3, Professor)*

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381 • *Supportive management and leadership*

382 Most in-depth interview participants mentioned that senior management and institutional
383 leadership is providing immense support by ensuring appropriate provision of protective
384 equipment (PPE) in the Covid-19 and non-Covid-19 wards to ensure the safety of frontline
385 healthcare providers. In addition, few participants mentioned that the institutional leadership
386 regularly visits Covid-19 units for staff appreciation and encouragement. Besides, the senior
387 management responds to healthcare providers' concerns in a timely manner through a
388 WhatsApp group.

389

390 *“Initially, we were supposed to remain inside the patient room consecutively for 4*
391 *hours. This was very exhausting for bedside nurses especially since we have to wear*
392 *three layers of PPE. We raised these concerns and senior management has now*
393 *permitted us to exit the room when the patient's condition gets stable ... we now*
394 *observe the patients from the mirrored door. This has given us a huge relief” (IDI-*
395 *11, Nurse)*

396

397 While frontline providers appreciated the support received from management and institutional
398 leadership, they also recognized the efforts of all other support departments who are working
399 together for the safety of frontline hospital staff. These support departments include finance,
400 design office, construction, laundry, purchase and supply chain management, safety and

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3 401 security, human resource, information, and technology department, nutrition and food services,
4
5 402 marketing and communications, travel services, etc.
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10 404 *“All the support departments are contributing in the same manner as our frontline*
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12
13 405 *healthcare providers” (KII-01, Professor)*
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18 407 In addition, the few IDI participants mentioned that institutional leadership has arranged
19
20 408 accommodation facilities for the frontline staff who are working in Covid-19 wards but the
21
22 409 hospital staff is not availing those services because they have their families and children back
23
24 410 home. Few respondents further stated that the senior management has also ensured the
25
26 411 provision of shower facilities for the frontline hospital staff; however, due to time limitations,
27
28 412 nurses are unable to make effective use of those facilities.
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35 414 **Theme 3: Recommendations to support the healthcare workforce during the Covid-19**
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37 415 **crisis.**
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42 417 • *Prepare and train backup health workforce*
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44 418 Both IDI and KII participants mentioned that they have been experiencing staff shortages in
45
46 419 Covid-19 wards because many of the frontline health care providers have been either
47
48 420 quarantined or isolated due to exposure. When asked about recommendations to support the
49
50 421 frontline health workforce, most IDI respondents suggested that healthcare providers (doctors
51
52 422 and nurses) of other sub-specialties (neurology, cardiac, surgery, orthopedic) need to be trained
53
54 423 as a backup to mitigate situations when entire internal medicine teams may be placed in self-
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3 424 quarantine due to Covid-19 exposure. In addition, a few key informants recommended that
4
5 425 there should be a central backup plan for staff coverage in both Covid-19 and routine wards.
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11 427 *“Currently, only the healthcare providers of Covid-19 wards have received*
12
13 428 *specialized training on ventilator code, BIPAP management, and handling body of*
14
15 429 *expired Covid-19 patient. However, these training should be given to all healthcare*
16
17 430 *staff across the institution to prepare a central backup”.* (IDI-03, Nurse)
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23 432 • *Ensuring motivation for frontline health workforce*

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25 433 To ensure enthusiasm among front liners, study respondents highlighted the need of
26
27 434 appreciating and motivating frontline providers for their countless efforts in this pandemic
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29 435 battle.
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35 437 Most IDIs including frontline nurses suggested that risk allowance should be given to all
36
37 438 frontline healthcare providers involved in the treatment and management of Covid-19 patients.
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39 439 Healthcare providers suggested that instead of giving extra time off, hospital staff should be
40
41 440 compensated for taking additional risks while caring for Covid-19 cases.
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46
47 442 *As you know the world is very materialistic and people always need motivation. While*
48
49 443 *we are being encouraged by senior management, this form of verbal motivation will*
50
51 444 *only work for a time period. If the current situation is going to go on, we will need to*
52
53 445 *give people an added incentive in the form of material compensation. This can either*
54
55 446 *be more money or additional days off* (IDI-04, Nurse).
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3 448 In addition, respondents verbalized that some activities for staff entertainment should also be
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5 449 thought-about to alleviate stress and anxiety associated with this crisis situation among
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8 450 healthcare providers.

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12 452 • *Anticipate and address the mental health needs of the health workforce*

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14 453 IDI and KII respondents mentioned that there is no formal platform established where front
15
16 454 liners' voices are being heard. Such a platform could provide an opportunity to anticipate and
17
18 455 address the mental health needs of the frontline health workforce.
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24 457 *Everyone is very stressed. I see it every time one of my staff has to take care of a*
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26 458 *suspected patient, they are hesitant and scared. Sometimes, I feel the same way myself.*
27
28 459 *We need an integrated counseling program. People should not just come for*
29
30 460 *counseling when they are mentally struggling. Similar to how we have guidelines for*
31
32 461 *PPE and social distancing we should have small group talks on ZOOM so that we can*
33
34 462 *dispel our anxieties before they build up (KII 06, Associate Professor).*
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41 464 Few study participants particularly KIs appreciated the motivation sessions organized by
42
43 465 psychiatric fellows on stress and coping. However, study respondents highlighted the need of
44
45 466 arranging more psychiatric sessions for healthcare staff on a daily basis to cope with the stress.
46
47 467 More specifically, participants stated that currently there is a blanket approach around mental
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49 468 health; however, more is needed to address varied concerns of the health workforce.
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55 470 *There was a zoom session arranged on stress management, but I was unable to attend*
56
57 471 *it due to my duties. I think we need more of these sessions. We can even add more*
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3 472 *innovative things such as breathing exercises, mindfulness, and yoga. There is so*
4
5 473 *much anxiety relating to Covid-19 both at work and in our homes. Everyone is so*
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7 474 *panicked and there is so much hype going around. These types of innovative sessions*
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9 475 *would really help (IDI-05, Doctor)*
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15 477 **Discussion**

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18 478 To the best of our knowledge, this is the first study to explore perceptions and experiences of
19
20 479 healthcare providers during the Covid-19 Pandemic in Pakistan. The research identified
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22 480 challenges faced by healthcare providers while managing Covid-19 patients, alongside
23
24 481 strategies to cope with these. The frontline healthcare providers pointed out several concerns
25
26 482 that influenced their ability and willingness to treat and manage Covid-19 patients. These
27
28 483 included shortage of PPEs and hand sanitizers, lack of clear SOPs, ad hoc management of
29
30 484 hospital outpatient area for Covid-19 screening and testing, violent behavior by families of
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32 485 Covid positive patient, and limited capacity of the hospital to treat and manage increasing
33
34 486 Covid-19 positive patients. Notwithstanding some challenges that cannot be mitigated by the
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36 487 institution such as the increasing number of Covid positive patients and unexpected violent
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38 488 behavior of families of Covid-19 positive patients, a number of corrective actions that can be
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40 489 taken to lessen the impact of others.
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48 491 Our results highlight, especially in the initial period of the crisis, differences in the responses
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50 492 received from senior management and frontline providers with regard to the availability of
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52 493 PPEs and sanitizers, presence of clear SOPs, preparedness of hospital to manage Covid-19
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54 494 pandemic. These discrepancies could be partly due to the communication gap between the two
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56 495 group of respondents (whereby senior management and hospital leadership was heavily
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58 496 involved in the process of designing new screening and testing site, procuring PPE and
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3 497 updating SOPs considering the differential progression of the outbreak). Most have now been
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5 498 addressed through corrective actions by the hospital leadership during the last few weeks and
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7 499 months. As this is a leading private teaching hospital in the country, the senior management
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9 500 and hospital leadership was able to successfully address the gaps to improve the experiences
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11 501 of front liners involved in this pandemic. However, this may not be the case in most public
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13 502 sector hospitals, where front-line healthcare workers continue to face challenges. The
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15 503 healthcare systems in low-middle-income countries face serious constraints in capacity and
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17 504 accessibility during normal times. This would be aggravated during the Covid-19 outbreak,
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19 505 leading to worse clinical outcomes, poor quality healthcare, and poor healthcare workers'
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21 506 experiences[23, 24].
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28 508 Consistently with experiences from previous outbreaks and emergencies[23, 25], frontline
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30 509 healthcare workers providing care to Covid-19 patients experienced increased anxiety and
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32 510 stress. Our study found that the increased exhaustion among healthcare providers is due to the
33
34 511 fear of acquiring infection and transmitting it to their family members. Anxiety and burnout
35
36 512 among healthcare providers were also reported by studies conducted in high income countries
37
38 513 (HICs) although countries were combating different stages of the pandemic[23]. This may be
39
40 514 due to standard changes in working hours, shortage in a skilled workforce, and inadequate
41
42 515 access to PPE[23]. The frontline providers in our study felt overwhelmed due to the exhaustive
43
44 516 donning and doffing process, intense work, and a large number of patients, which was
45
46 517 consistent with the studies on the outbreak of MERS-Cov[26, 27] and Ebola[28]. Our results
47
48 518 undoubtedly show that stigma is a pressing issue for the frontline healthcare workers working
49
50 519 in Covid-19 wards. Several studies have reported that there are several potential mechanisms
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52 520 by which stigma could affect healthcare providers' outcomes[29, 30], and HCPs who
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54 521 experience higher levels of stigma reported increased physical (fatigue) and psychological
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3 522 distress (burnout)[31]. These pressures can lead to mental health problems for example
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5 523 burnout, anxiety, depression, insomnia, denial, anger, which not only influence frontline
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7 524 healthcare providers' attention, understanding, and decision-making capacity but could also
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9 525 have a long-lasting impact on their physical and psychological health after the Covid-19
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11 526 emergency is over[7].
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17 528 While the outbreak of Covid-19 put immense pressure and stress on the hospital staff, many
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19 529 enabling factors supported hospital staff to deal with these aspects, which have progressively
20
21 530 evolved over the duration of the pandemic. As a result of this pandemic, the entire hospital
22
23 531 was able to pull together and many departments across the university hospital coordinated to
24
25 532 ensure smooth and efficient operations. Findings suggest that the respondents felt that they
26
27 533 were actively encouraged and supported by senior management and the university leadership.
28
29 534 More specifically, the research subjects felt that over time the safe and secured hospital
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31 535 environment enabled healthcare providers to perform their routine tasks and reduce their
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33 536 feeling of uncertainty and fear. Similar findings have been reported by the qualitative study
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35 537 published in Lancet Global Health by Qian Liu and colleagues[32]. Our study found that the
36
37 538 healthcare providers were appreciative of the training provided to them regarding the use of
38
39 539 PPE, N95 mask, donning and doffing, and taking test samples using nasopharyngeal swabs.
40
41 540 However, it was reported that more drills could be conducted to improve their hands-on skills
42
43 541 and reduce the risk of acquiring infection. Health workforce safety is a high priority and
44
45 542 therefore it is essentially important to provide sufficient protective supplies and training and
46
47 543 drills for effective management of Covid-19 cases[32]. A unique yet encouraging finding
48
49 544 reported by our study participants was that the hospital developed a strong system of
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51 545 information sharing to keep faculty and staff updated about the Covid-19 situation through
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53 546 video messages, hotlines, town halls, and what are now called Covinars.
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5 548 Our study also reported some recommendations to mitigate current challenges and further
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7 549 improve the experiences of healthcare providers working in Covid-19 wards. The frontline
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10 550 providers caring for Covid-19 patients felt extreme physical discomfort and fatigue due to long
11
12 551 working hours and complicated donning and doffing process and suggested that institutions
13
14 552 should provide risk allowance to compensate healthcare providers for the additional risks they
15
16 553 take and to motivate staff to continue to work. This finding is consistent with the previous
17
18 554 experience from the outbreak of Ebola in western Africa, where risk allowance was adopted as
19
20 555 a strategy for motivating and retaining healthcare workers[33]. Our study suggested preparing
21
22 556 and cross-train a backup health workforce to effectively respond to staff shortages as many of
23
24 557 the frontline healthcare providers have been either quarantined or isolated due to exposure.
25
26 558 Similar recommendations have been provided by a number of studies conducted in diverse
27
28 559 settings[34-36]. Our study also showed that a formal platform where front liners' voices could
29
30 560 be heard did not exist. Respondents reported that such a platform could provide an opportunity
31
32 561 to anticipate and address the mental health needs of the frontline health workforce. Experiences
33
34 562 from similar outbreaks suggest that early psychological intervention and establishment of early
35
36 563 support systems are particularly important for front liners to promote the emotional release and
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38 564 improve healthcare providers' mental health[37].
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47 566 This study was conducted in a leading private tertiary care teaching hospital in Karachi,
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49 567 Pakistan that offers state-of-the-art healthcare. The initial challenges progressively led to a
50
51 568 fairly successful story. The same cannot be said for a large number of public and private
52
53 569 hospitals in the country. The shortage of PPE has been a frequent occurrence and has even led
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55 570 to public protests, undoubtedly contributing to mental stress and distress. The experience
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57 571 gained from the current study offers lessons for other hospitals in the country to benefit from.
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3 572 There is no doubt that good quality healthcare against Covid-19 can only be ensured if the
4
5 573 frontline workers are well taken care of in terms of their mental health and physical needs when
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8 574 asked to serve critically ill patients round the clock.
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11
12 576 This study provides an initial evidence base of healthcare providers' experiences of managing
13
14 577 Covid-19 patients in an early stage of the pandemic when the participants just accepted the
15
16 578 anti-epidemic tasks. Diverging from the findings of various studies on the experience of
17
18 579 negative emotions and barriers encountered during the outbreak, we found that facilitators
19
20 580 coexist with challenges, which supported front liners to effectively deal with the crisis. The
21
22 581 findings from this study can be directly used for improving preparedness and response for
23
24 582 possible future Covid-19 waves or other outbreaks. Future research could be conducted to
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26 583 perform an in-depth analysis of before-and-after pandemic conditions and their influence on
27
28 584 healthcare providers' experiences.
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33 585 *Methodological Limitations:* The study sample was small, particularly when considering the
34
35 586 AKUH employs over 6300 healthcare providers, yet our study intent was to be dug into the
36
37 587 depth of each interview to understand unique perspectives and experiences of healthcare
38
39 588 providers regarding Covid-19. Bengtsson et al. suggest that the qualitative researcher has often
40
41 589 to choose depth over breadth to gain a rich understanding of a phenomenon [38]. However,
42
43 590 there remains a possibility that our sample belongs to a particular subgroup of healthcare
44
45 591 providers who were motivated to engage with the study to inform a particular story for their
46
47 592 Covid-19 experience. Another limitation of this study was that all study respondents were
48
49 593 interviewed online, to minimize the risk of infection. The authors did not have the opportunity
50
51 594 to build rapport with respondents over Zoom or obtain non-verbal cues during interviews. Due
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53 595 to the nature of outbreak prevention, our study was unable to conduct focus group interviews,
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55 596 which would have provided detailed information about personal and group feelings. Lastly,
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3 597 this was a short-term study and does not include long-term experiences of the research subjects
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5 598 with this pandemic.

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8 599 Conclusion:

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10 600 This study provides an in-depth understanding of the healthcare providers' experiences of the
11
12 601 Covid-19 outbreak and emphasizes that adequate training and drills, sufficient PPE, a safe and
13
14 602 secured hospital environment, healthcare providers motivation, supportive hospital
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16 603 management and leadership, strong hospital system of information sharing and psychological
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18 604 support to address mental health needs of front liners are necessary to improve the overall
19
20 605 experiences of health-care providers fighting Covid-19.
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3 **607 Declaration of interests**
4

5 **608 Ethics approval and consent to participate**
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7
8 **609** Ethical approval for this study was obtained from the Aga Khan University Ethical Review
9
10 **610** Committee (AKU-ERC) – [2020-3694-9056]. Written informed consent was provided by all
11
12 **611** study participants. Informed consent included permission to audio record the interviews and
13
14 **612** use anonymized quotes. Voluntary participation and the right to ask any questions and to
15
16 **613** decline participation at any time were emphasized during the data collection.
17

18
19 **614** Consent for publication
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21 **615** Written informed consent for publication was obtained.
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23
24 **616** Competing interests
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26 **617** We declare no competing interests.
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29 **618** Availability of data and materials
30

31 **619** The datasets used and/or analysed during the current study are available from the corresponding
32
33 **620** author on reasonable request.
34

35
36 **621** Funding
37

38 **622** This is self-funded research and did not receive any funding.
39

40
41 **623** Authors' contributions
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43 **624** All authors had full access to all the data in this study and take responsibility for the integrity
44
45 **625** of the data and the accuracy of the data analysis. SS, SSQ, ASF, NAP, ZHA, NA designed the
46
47 **626** study. ASF supervised data collection and analysis. ASF, NAP, ZHA, MMS collected the data.
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49 **627** ASF, NAP, ZHA, MMS, SS analyzed and interpreted the data. ASF, NAP, ZHA, MMS wrote
50
51 **628** the first draft of the manuscript. All authors contributed to reviewing and editing the
52
53 **629** manuscript.
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55
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Annex -1

Assessing Tertiary Care Hospital's (AKU's) Readiness to Cope with Covid.19 and Future Preparedness to
Manage Emergencies in Karachi, Pakistan
Key Informant Interview Guide

Basic Information

S.no	Name (Confidential)	Age	Sex	Designation	Institution	Years of experiences	Specialty
1							
2							
3							

Knowledge, attitude and perceptions

- How do you feel about your level of knowledge regarding COVID-19?
Probes: Spread of COVID-19, management, prevention
- What are your perceptions about managing COVID cases at AKUH?
Probes: Facilities for screening, testing, patient isolation, treatment and patient and family education
- Do you have concerns with the prospect of managing/treating cases at AKUH?
Probes: inadequate screening facilities, less testing kits, inadequate capacity of healthcare providers to manage COVID-19 cases, lack of isolation wards
- What are your view on the safety measure currently in placed at AKUH?
- How do you feel about being in a very responsible position, and working under tremendous pressure with COVID-19 situation?

Perceptions on Emergency Plan

- What are your perceptions about AKUH emergency plan for dealing with COVID-19 pandemic? and also specific to your department or position?
Probe: Satisfaction with the hospital emergency plan, whether or all imp aspects are covered, reducing employee exposure etc/.
- Do you feel a sense of safety for hospital staff in the hospitals emergency plans, which are currently in place?
Probe: what can be done more, what else is needed related to your department? for young persons, old people of more than 50 years, children, pregnant women or delivering COVID-19 affected patients

Perceptions on Hospital Capacity

- How do you feel about the AKUH capacity to deal with COVID-19 patients?

Probes: access to required equipment/ resources

2. What are some of the barriers that hospital staff face while caring for COVID-19 cases?
3. How these barriers could be handled efficiently, in spite of limited resources at AKUH?
4. Do you think that your service domain/ specialty is prepared to manage COVID-19 affected patients?

Probes: if yes how, if no why?

5. In your opinion, what precautions should be acquired for carrying out a routine procedure such as in ER surgeries, intubation, delivery care, C-section planned or otherwise
6. At AKUH, what are the facilitators, that provided support to deal with COVID-19 situation?
Probes: Trainings, drills, PPEs availability, management support, etc.
7. Based on your experience on COVID-19, what are your suggestions to improve hospital's capacity to manage COVID-19

Training and Drills

1. How should nurses be trained/doctors be trained? Should this training be specialty specific or some forms of basic training to all staff?
2. In your opinion, are sufficient training and drills provided to the healthcare providers for dealing with this emergency?
3. What aspects were covered in the training?

Probes: medical treatment procedures, personal protective measures, information system management, disinfection and sterilization and principles of quarantine and isolation

Information sharing for crisis communication

1. What are your thoughts on the hospitals system of information sharing for crisis communication?
2. In your opinion, what special arrangements have been made at AKUH to facilitate information sharing for crisis communication

Probes: COVID Hotline for staff, COVID helpline for public

Future Preparedness

1. In your opinion, what are the needs for future preparedness for any outbreak or natural disaster for AKUH?

Probes: staff trainings, special wards, equipment, protective gears, emergency drills, etc.

Annex-2

Assessing Tertiary Care Hospital's (AKU's) Readiness to Cope with COVID-19 and Future Preparedness to Manage Emergencies in Karachi, Pakistan

In-Depth Interview Guide

Basic Information

S.no	Name (Confidential)	Age	Sex	Designation	Institution	Years of experiences	Specialty/Ward
1							
2							
3							

Knowledge, attitude and practice

- How do you feel about your level of knowledge regarding COVID-19?
Probes: Spread of COVID-19, management, prevention
- What are your perceptions about managing COVID cases at AKUH?
Probes: Facilities for screening, testing, patient isolation, treatment and patient and family education
- Do you have concerns with the prospect of managing/treating cases at AKUH?
Probes: inadequate screening facilities, less testing kits, inadequate capacity of healthcare providers to manage COVID-19 cases, lack of isolation wards
- What are your views on the safety measures currently in place at AKUH?
- Are you using PPE while caring for COVID-19 cases, as guided during the trainings?

Perceptions on Hospital Emergency Plan for COVID-19

- What are your perceptions about AKUH emergency plan for dealing with COVID-19 pandemic?
Probe: Were you briefed on the emergency plan for COVID-19 - by whom, when, any refreshers given?
- Do you feel a sense of safety in the hospital's emergency plan, which are currently in place?
Probe: for your safety, healthcare providers' safety, family members' safety

Training and Drills

- Were you provided with sufficient trainings and drills for dealing with this emergency?
Probes: satisfaction with training (content, duration, etc.),
- What aspects were covered in the training?

Probes: medical treatment procedures, personal protective measures, information system management, disinfection and sterilization and principles of quarantine and isolation

Perceptions on Hospital Capacity

1. How do you feel about the AKUH capacity to deal with COVID-19 patients?
Probes: access to required equipment/ resources
2. What are some of the barriers that hospital staff face while caring for COVID-19 cases?
3. How these barriers could be handled efficiently, in spite of limited resources at AKUH?
4. Do you think your service domain/ specialty is prepared to manage COVID-19 affected patients?
Probes: if yes how, if no why?
5. In your opinion, what precautions should be acquired for carrying out a routine procedure such as in ER surgeries, intubation, delivery care, C-section planned or otherwise
6. At AKUH, what are the facilitators, that provided support to deal with COVID-19 situation?
Probes: Trainings, drills, PPEs availability, management support, etc.

Information sharing for crisis communication

1. What are your thoughts on the hospitals system of information sharing for crisis communication?
Probes: Are you getting the information that you need?
2. Do you feel like you are able to talk about your concerns?
Probes: through hotline for employees

Stress & coping

1. How do you feel about working under tremendous pressure with COVID -19 situation?
Probes: working at odd hours, weekends in addition to routine responsibilities, wearing PPEs for long periods
2. What kind of relief you look for yourself to manage with these pressures?
Probes: compensation/overtime, sufficient PPEs, adequate rest periods, etc.
3. Can you share some of your apprehensions while dealing with COVID -19 suspected or positive patient's?
Probes: Family members/ colleagues getting infected?
4. How do you cope with anxiety and fear related to managing COVID-19 inpatients?
Probes: Coping strategies
5. Do you have suggestions on how institution could provide support services for coping with stress related to this crisis situations?

Future Preparedness

1. In your opinion, what are the needs for future preparedness for any outbreak or natural disaster for AKUH?
Probes: staff trainings, special wards, equipment, protective gears, emergency drills, etc.

Standards for Reporting Qualitative Research (SRQR)*

<http://www.equator-network.org/reporting-guidelines/srqr/>

Page/line no(s).

Title and abstract

<p>Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	<p>Pape no. 1/line no. 2-3</p>
<p>Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	<p>Pape no. 2-3/line no. 27-52</p>

Introduction

<p>Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	<p>Pape no. 4-5/line no. 66-98</p>
<p>Purpose or research question - Purpose of the study and specific objectives or questions</p>	<p>Pape no. 4-5/line no. 100-107</p>

Methods

<p>Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	<p>Pape no. 5/line no. 109-111</p>
<p>Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	<p>Pape no. 5/line no. 109-111</p>
<p>Context - Setting/site and salient contextual factors; rationale**</p>	<p>Pape no. 5/line no. 109-112</p>
<p>Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	<p>Pape no. 5-6/line no. 109-120</p>
<p>Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	<p>Pape no. 9/line no. 173-175</p>
<p>Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	<p>Pape no. 5-7/line no. 114-147</p>

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	Pape no. 6/line no. 123
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	Pape no. 9-10/line no. 188-192
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	Pape no. 7/line no. 148-160
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	Pape no. 7/line no. 148-160
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	Pape no. 7-8/line no. 161-171

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	Pape no. 11-23/line no. 200-479
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	Pape no. 11-23/line no. 200-479

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	Pape no. 23-27/line no. 480-582
Limitations - Trustworthiness and limitations of findings	Pape no. 28/line no. 589-602

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	Pape no. 29/line no. 622
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	Pape no. 29/line no. 627

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

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**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:
O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
DOI: 10.1097/ACM.0000000000000388

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