

1 **Cost of In-patient Management of Covid-19 Patients**

2 **in a Tertiary Hospital in Kuwait**

3 Amrizal Muhammad Nur¹, Syed Mohamed Aljunid¹, Mohammad Almari¹

4 * Correspondence author: amrizal65@gmail.com

5 ¹ Department of Health Policy and Management, College of Public Health, Kuwait University, Shadadiya

6 Kuwait

7 Background: Among the GCC countries affected by COVID-19 infections, Kuwait was impacted with
8 658,520 cases and 2,563 deaths as reported by WHO on September 30, 2022. However, the impact of the
9 COVID-19 epidemic on the economy of Kuwait especially in health sector is unknown. Objective: The aim
10 of this study is to determine the total cost of COVID-19 in-patient management in Kuwait. Method:
11 Retrospective design was employed in this study. A total 485 Covid-19 patients admitted to a tertiary
12 hospital assigned to manage Covid-19 cases was randomly selected for this study from 1st May to 31st
13 September 2021. Data on sociodemographic, length of stay (LOS), discharge status and comorbidity were
14 obtained from the patients' medical records. Among others, data on cost in this study cover
15 administration, utility, pharmacy, radiology, laboratory, nursing, and ICU costs. The unit cost per
16 admission was imputed using a step-down costing method with three levels of cost centers. The unit cost
17 was multiplied by the individual patient's length of stay to obtain the cost of care per patient per
18 admission. Findings: The mean cost of Covid-19 inpatient per episode of care was KD 2,216 (SD=2,018)
19 equals to US\$ 7,344 (SD=6,688) with the average length of stay of 9.4 (SD=8.5) days per admission. The
20 total treatment costs of Covid-19 inpatient (n=485) were estimated to be KD 1,074,644 (US\$ 3,561,585),
21 in which the physician and nursing care cost were the largest share of costs (42.1%) with KD 452,154 (US\$
22 1,498,529). The second- and third-largest costs were intensive care (20.6%) of KD 221,439 (US\$ 733,893)
23 and laboratory costs (10.2%) of KD 109,264 (US\$ 362,123). The average cost for severe Covid-19 patient
24 was KD 4,626 (US\$ 15,332), which is almost three times higher than the non-severe patients of KD 1,544

25 (US\$ 5,117). Conclusion: The cost of managing Covid-19 cases is substantial. The cost information can
26 assist hospital managers and policymakers in designing more efficient interventions, especially for the
27 management of high-risk groups.

28 **Keywords:** Cost, Covid-19, Hospital

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49 **Introduction**

50 Initial cases of novel coronavirus (2019-nCoV)-infected pneumonia (NCIP) occurred in Wuhan,
51 Hubei Province, China, in December 2019 and January 2020 [1]. This virus has caused widespread
52 pandemics with high morbidity and mortality [2]. Globally, there have been 614,385,693 confirmed
53 cases of COVID-19, including 6,522,600 deaths and 325,602 new cases reported by the WHO. As of
54 September 27, 2022, 12,677,499,928 vaccine doses were administered [at 3]. Among the GCC countries
55 affected by COVID-19 infections, Kuwait was impacted, with 658,520 cases and 2,563 deaths A total of
56 8,214,656 vaccine doses have been administered in Kuwait as reported by WHO on September 30, 2022,
57 [4].

58 Many countries closed their borders, stopped all flights, and had to reduce their affairs with other
59 countries. These measures caused significant economic shrinkage worldwide, with businesses closing,
60 increasing unemployment, rising inflation, and the interruption of production and shipping [5]. The impact
61 of COVID-19 on the global economy is more severe because these infections reduce labor supply.
62 Quarantines, regional lockdowns, and social distancing have been adopted to contain the virus. Workplace
63 closures disrupt supply chains and lower productivity. Layoffs, income declines, fear of contagion, and
64 heightened uncertainty make people spend less, triggering further business closures and job loss. All these
65 lead to the shutdown of a significant portion of the economy (IMF) [6].

66 World leaders have already been warned of the sustainability of health care systems before the
67 current pandemic hit [7, 8]. The rapid and global spread of the pandemic has exacerbated existing
68 problems and created new issues that have challenged decision-makers and negatively impacted the
69 health of the populace [9]. To mitigate the impact of this and future pandemics, decision makers need to
70 understand how their health systems are impacted. Of particular importance is understanding healthcare
71 resource use (e.g., length of hospital stays) and subsequent costs of the pandemic [10]. Decision makers
72 can use this knowledge to plan resources and allocate budgets for future health crises. Many people have

73 lost their jobs due to the pandemic. Many economic and social sectors have been indirectly affected by
74 Covid-19. Some of the business sectors that the pandemic has already impacted include general transport,
75 general insurance, manufacturing, and some forms of healthcare [11]. The results of a study in the United
76 States indicated that approximately 50% of participants reported income and wealth losses due to the
77 coronavirus, with average losses of US\$ 5,293 and US\$ 33,482, respectively [12]. A study in Russia showed
78 that the socioeconomic burden of COVID-19 would amount to 4.6 trillion rubles (US\$ 71.1 billion) or 4%
79 of GDP [13]. The prevention and treatment of COVID-19 can impose a considerable economic burden on
80 many people and societies. According to previous studies [14], all confirmed cases of Covid-19 should
81 receive inpatient care. Furthermore, Covid-19 patients often require costly treatment, such as mechanical
82 ventilation and extracorporeal membrane oxygenation, potentially considerably increasing healthcare
83 costs [15]. A study in the United States (2020) indicated that a single symptomatic Covid-19 infection
84 accounted for a median direct medical cost of US\$ 3, 045. They also reported that Covid-19 coronavirus
85 in the United States of America could result in direct medical costs incurred during the infection from US\$
86 163.3 billion if 20% of the population infected to US\$ 654.0 billion if 80% of the population is infected [16].
87 In a study in China, the total estimated healthcare and societal costs associated with Covid-19 were US\$
88 0.62 billion and US\$ 383.02 million, respectively [17]. Kuwait is a country located in the Middle East with
89 a population of 4,328,553 million (2021). The GDP per capita was estimated at US\$ 24,811. The current
90 health expenditure is 5.5% of the GDP [27,28].
91 The estimation of coronavirus disease burden on the health system can not only assist policymakers in
92 effectively allocating resources and prioritizing various measures, but also emphasizes the importance of
93 long-term planning for sustainable financing of similar conditions in the future. To the best of our
94 knowledge, the impact of the COVID-19 pandemic on the economy of Kuwait, especially in the health
95 sector, is unknown. This is the first study on health economic evaluation in Kuwait. This study aimed to
96 determine the total cost of COVID-19 inpatient management in a tertiary government hospital in Kuwait.

97 **Methods**

98 This study was a partial economic evaluation with a cross-sectional retrospective design, and the
99 management cost of inpatients admitted with COVID-19 and positive PCR test results in a tertiary hospital
100 in Kuwait between 1st May to 31st September 31, 2021. Patient clinical data were obtained from 485
101 randomly selected medical records (MR) of patients and extracted from electronic patient records
102 through the Hospital Information System (HIS) using patient data collection tool (appendix 1). Clinical data
103 included sociodemographic characteristics (age, sex, etc.), length of stay (LOS), discharge status, primary
104 diagnosis, comorbidity, medical or surgical procedures, laboratory tests, radiology tests, and
105 physiotherapy services. The full list of the information collected in this study is given in an appendix 1. The
106 management cost of Covid-19 patient was carried out imputed using a step-down costing method, which
107 was calculated from the provider 's perspective. Hospital costing data were collected using the costing
108 data collection tool in an excel sheet format that organizes costing data into three levels of cost centers:
109 overhead cost centers (e.g., administration, consumables, maintenance, etc.), intermediate cost centers
110 (e.g., pharmacy, radiology, etc.), and final cost centers, all wards and clinics (appendix 2). To estimate the
111 cost for each cost center, both capital costs (building, equipment, and furniture costs) and recurrent costs
112 (staff salary and other operational costs except salary) were combined. Information on activities that
113 reflect the workload, such as the number of discharges, inpatient days, number of visits, and floor space,
114 are gathered from medical records and engineering departments to determine appropriate allocation
115 factors.

116 **Computing of the provider cost**

117 There are seven steps in computing the unit cost using the stepdown costing approach:1. Defining
118 the cost centers, and 2.Grouped cost centers into (overhead cost centers, intermediate cost centers, and
119 final/patient care cost centers); 3. Obtain the total cost of each overhead, intermediate, and final care
120 cost center, 4. Decide on units to distribute costs; and 5. Allocate the costs of overhead cost centers to

121 intermediate and final care cost centers; 6. Allocate the costs of intermediate-to-final care cost centers;
122 7. Relate the unit cost to the individual patient's length of stay to obtain the cost of care per patient per
123 discharge. These 7 steps were adopted and modified method from WHO, Shepard, DS et.al (2000) and it
124 has been used for costing research method many times by Amrizal et.al [19,20]. The study was approved
125 by the Research and Ethics Committee of Kuwait Ministry of Health (Approval Code:1502/2020). The study
126 does not require informed consent because the data was extracted from Jaber Al Ahmad hospital
127 information system database and did not involve interviews of patients.

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129 **Results**

130 **Patient Demographics and other characteristics**

131 A total of 485 hospitalized patients with Covid-19 were included in this study. The mean and SD age of
132 patients was estimated at 52.9 (SD=18.1 years) and median ages 55 years. Most of the patients were
133 Kuwaitis patients (87.0%), females (54.6%), admitted to the general ward (79.6%) and ICU (20.4%),
134 discharged home, or recovered 73.4%. Most of the patients were symptomatic (94.8%). The mean length
135 of hospital stay was 9.4 ± 8.5 days. Covid-19 disease types were mild 139 (28.5%), moderate 259 (53.1%),
136 and severe 87 (18.4%) (Table-1).

137 As shown in (Table 2), the Treatment cost per admission and ALOS of mild condition: KD 1064 (SD=795)
138 equals US\$ 3,526 (SD=2,635) and ALOS 4.5 days (SD=3.4). The treatment cost per admission and ALOS of
139 moderate condition is KD 2,024 (SD=1,233), equal to US\$ 6,708 (SD=4,086) and ALOS 8.6 days (SD=5.2),
140 respectively. The treatment cost per admission and ALOS of severe condition is KD 4,626 (SD=3,035) equal
141 to US\$ 15,331 (SD=10,059) and ALOS 19.6 days (SD=12.8), respectively. The overall treatment cost per
142 patient per admission was KD 2,216 (SD=2,018), equal to US\$ 7,344 (SD=6,688), with an average Length
143 of Stay (ALOS) of 9.4 days (SD=8.5). In this study, US dollars were used for international comparison.
144 Average exchange rate in 2021 (1 KD= US\$ 3.3142).

145 As shown in (Table 3), The treatment cost per admission and ALOS of patients in the general ward: KD
146 1,670 (SD=1,175) equals US\$ 5,535 (SD=3,894) and ALOS 7.1 days (SD=4.9). The treatment cost per
147 admission and ALOS of patients in the ICU were as follows: KD 4,342 (SD=2,992) equals US\$ 14,390
148 (SD=9,916) and ALOS 18.4 days (SD=12.7). In general, the treatment cost per patient per admission in
149 averages: KD 2,216 (SD=2,018) equals US\$ 7,344 (SD=6,688) and the average Length of Stay (ALOS) per
150 patient per admission on averages: 9.4 days (SD=8.5).

151 Regarding the total treatment costs and the percentages of cost component for 485 covid-19 inpatients,
152 there were estimated to be KD 1,074,644 (US\$ 3,561,585), in which the physician and nursing care cost
153 were the largest share of costs (42.1%) with KD 452,154 equals to US\$ 1,498,529. Following that, the main
154 costs were intensive care costs (20.6%) with KD 221,439 equal to US\$ 733,893, laboratory costs (10.2%)
155 KD 109,264 equal to US\$ 362,123, administration costs (6.7%) KD 71,479 equal to US\$ 236,896 and drug
156 costs (5.5%) KD 58,611 equals to US\$ 194,249. The average treatment cost for Covid-19 patient with
157 severe conditions was almost three times higher than that for non-severe patients. The average cost of
158 severe patients was KD 4,626 (SD=3,035), equal to US\$ 15,332 (SD=10,059), and non-severe patient were
159 KD 1,544 (SD=1,014), equal to US\$ 5,117 (SD=3,361). In general, the average treatment cost per patient
160 per admission, KD 2,216 (SD=2,018), equals US\$ 7,344 (SD=6,688) (Table 4 and Figure 1).

161 Discussion

162 This study is the first study on the cost of managing COVID-19 patients in Kuwait. The outbreak of COVID-
163 19 and the increasing number of patients in Kuwait impose high costs on infected patients and the
164 healthcare system. The economic burden of these diseases has been a cause of concern among managers
165 and policymakers in the health sector. Hence, identifying the economic consequences of COVID-19 could
166 provide valuable evidence for policymaking. This study provides an estimate of the cost of COVID-19 per
167 patient per admission from a healthcare provider's perspective. We report an average inpatient treatment
168 cost of US\$ 7,344, which is almost similar to the cost in China of 6,827 USD from 70 empirically observed

169 cases [24] but is lower than the cost reported in Saudi Arabia (12, 547 USD) [25], which is also lower than
170 that reported in a recent study conducted in the United States by Shrestha et al. (2021). They reported
171 that the average hospitalization cost per patient was estimated to be 13,090 USD [35]. This current finding
172 is higher compared to several studies conducted by: Bartsch et al in USA [21], where the cost of Covid-19
173 per ranged from 2,837 to 3,205 USD, Gedik et al in Turkey [22], where the mean cost of Covid-19 patients
174 was 882 USD (SD=667) and Ghaffari Darab et al in Iran [23], where the mean cost of Covid-19 patients was
175 3,755 USD. Meanwhile, the mean cost of mild, moderate, and severe Covid-19 in this study were 3,526
176 USD, 6,708 USD and 15,331 USD respectively. These finding are lower compared to the study conducted
177 by Li et al in China, the mean cost of Mild Covid-19 and moderate Covid-19 were 4,552 USD and 11,058
178 USD respectively [24]. In this study, it was found that more severe COVID-19 patients and ICU patients
179 had higher healthcare costs than milder COVID-19 patients. This finding is similar to studies by Athanasakis
180 et al [26], Gedik et al [22], Li et al [24] and Khan et al [25]. Regarding the cost comparison between the
181 general ward and ICU admission, the treatment cost per admission in the general ward and ICU admission
182 was US\$ 5,535 and US\$ 14, 390 USD, respectively. This finding is lower than the study in Saudi Arabia,
183 where general Medical Ward (GMW) and ICU were 11,385 USD and 21,173 USD respectively [15]. This
184 finding is also lower than that of a recent study conducted in the United States by Shrestha et al. (2021),
185 where the average hospitalization costs per patient were estimated to be 13,090 USD without ICU and
186 21,222 USD with ICU admission [35]. The reason for the cost differences may be due to differences in
187 sample size, study time period, cost methodology, and composition of sample members. There have been
188 significant differences in the cost of healthcare delivery units worldwide in non-coronavirus circumstances
189 [36]. Therefore, it may not be useful to compare the costs in different countries. However, such
190 comparisons can provide an understanding of the severity of financial effects on the health systems of
191 other countries. As shown in Table 3, the average cost of patients staying in the ICU (US\$ 14,390) is about
192 3 times that of patient who did not receive intensive care (US\$ 5,535). In the study population of the

193 present study, 20.4% (99/485) of hospitalized patients used intensive care, while in the study by Darab et
194 al., this rate was 7% [23]. Some other studies have suggested that about one-third of people infected with
195 SARS-CoV-2 are in critical condition and require intensive care [37]. Others report that approximately 5%
196 of COVID-19-confirmed cases require intensive care [38].

197 **Cost Component:**

198 Based on the results above (Table 4), the total treatment costs of Covid-19 inpatient were
199 estimated to be KD 1,074,644, equal to US\$ 3,561,585, in which physician and nursing care costs
200 accounted for the largest share of costs (42.1%). The other costs were intensive care costs (20.6%; US\$
201 733,893), laboratory costs (10.2%; US\$ 362,123), administration costs (6.7%; US\$ 236,896) and drug costs
202 (5.5%; US\$ 194,249). This highest component cost is different from the Ghaffari Darab study, with the
203 largest share of costs being intensive care and nursing services at 43% of total costs [23]. However, in the
204 study by Li X-Z, the highest costs were related to medicines [24]. In this study, the average Length of Stay
205 (ALOS) per patient per admission in averages: 9.4 days (SD=8.5). This ALOS is lower than a study conducted
206 in Germany showed that although the average length of stay in hospital for all patients was 14.3 days [39].
207 The estimates of the present study showed that the average cost in the group with severe conditions was
208 approximately three times that of the group with mild conditions.

209 The mean \pm SD age of patients was estimated at 52.9 \pm 18.1 years and median ages 55 years. Similar to
210 Richardson's study, it was also confirmed that among hospitalized patients with Covid-19, most were
211 elderly men [40]. In a study conducted in China, hospitalized patients were mostly men, with a median
212 age of 56 years, and 26% required inpatient care [41]. As previously mentioned, the Covid-19 outbreak
213 has already imposed massive costs on the Kuwait healthcare system, and the disease response system
214 must adapt to the financial shock caused by this disease in various ways. Ensuring a comprehensive
215 response to the Covid-19 pandemic requires public funding. Reprioritizing public expenditure to
216 strengthen the health and economic system requires timely measures by government leaders and a

217 supportive public funding environment. To respond to these new economic and financial constraints,
218 adjustments must be made to both the revenue and expenditure dimensions of the budget [41]. In this
219 study, we only investigated the costs of hospitalized patients, excluding other cost dimensions in the
220 health system and the economy of the country. Regarding the unpredictable nature of this disease and its
221 definitive treatment, the development of evidence in the field of epidemiological dimensions and its
222 economic effects requires appropriate decision-making and policymaking, and research efforts in this field
223 should be continued.

224 **Study limitation and recommendation**

225 This study was conducted in a single tertiary hospital assigned by the government as a center for
226 Covid-19 patient management. The cost was calculated from the hospital perspective, excluding indirect
227 costs such as lost income (hospitalization), lost income (recovery at home), and potential productivity lost
228 (premature death). The cost comparison was not apple-to-apple because there were some difficulties in
229 comparing across the literature due to differences in methodology, population, health care costs, health
230 system, and so on. However, the study findings were analyzed using established, standardized, and
231 reproducible methods with the aim of supporting emergency preparedness in referral hospitals in the
232 future. This finding did not include community-based care costs, PPE equipment costs, transport costs,
233 surveillance efforts, or other impacts on the health care system.

234 It is recommended that further studies look at and explore the complete cost analysis, including indirect
235 costs such as lost income (hospitalization), lost income (recovery at home), and potential productivity loss
236 (premature death). Other costs, such as PPE equipment cost, transport costs, out-of-pocket costs to
237 patients, home quarantine costs, institutional quarantine costs, and vaccination costs should be included.
238 It is suggested that the government should invest in prevention strategies rather than treatment
239 approaches to control these diseases.

240 **Conclusion**

241 The average treatment cost per patient per admission was KD 2,216 (SD=2,018), which is equal to
242 US\$ 7,344 (SD= US\$ 6,688), and the average Length of Stay (ALOS) per patient per admission was 9.4 days
243 (SD=8.5). Physician and nursing care costs accounted for the largest share of costs (42.1%; US\$ 1,498,529),
244 followed by Intensive care costs (20.6%; US\$ 733,893) and laboratory costs (10.2%; US\$ 362,123). The
245 average cost for patients with severe conditions was approximately three times that of patients with mild
246 conditions. The cost information can assist hospital managers and policymakers in designing more
247 efficient interventions, especially for the management of high-risk groups.

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367 **Ethical approval**

368 The study was approved by the Research and Ethics Committee of Kuwait Ministry of Health
369 (Approval Code:1502/2020). The study does not require informed consent because the data was extracted
370 from Jaber Al Ahmad hospital information system database and did not involve interviews of patients.

371

372 **Data availability**

373 The data that support the findings of this study are available from the Jaber Al-Ahmed Hospital,
374 but restrictions apply to the availability of these data and are not publicly available. However, data are
375 available from the authors upon reasonable request and with permission from the Jaber Al-Ahmed
376 Hospital.

377 **Disclosure**

378 The authors report no conflicts of interest in this work.

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381 **Author Contributions:**

- 382 **Conceptualization:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 383 **Data curation:** Amrizal Muhammad Nur, Mohammad Almari
- 384 **Formal analysis:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 385 **Funding acquisition:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 386 **Investigation:** Amrizal Muhammad Nur, Mohammad Almari
- 387 **Methodology:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 388 **Project administration:** Amrizal Muhammad Nur and Mohammad Almari
- 389 **Resources:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 390 **Supervision:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 391 **Validation:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 392 **Visualization:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
- 393 **Writing – original draft:** Amrizal Muhammad Nur
- 394 **Writing – review & editing:** Amrizal Muhammad Nur, Syed Mohamed Aljunid
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Tables (1-4)

Table-1: Demographics and other characteristics of Covid-19 Patients

Patient Demographic and Characteristics	Mild (N = 139)	Moderate (N = 259)	Severe (N = 87)	Overall (N = 485)
Gender				
Female	78 (56.1%)	146 (56.4%)	41 (47.1%)	265 (54.6%)
Male	61 (43.9%)	113 (43.6%)	46 (52.9%)	220 (45.4%)
Age (years)				
Mean \pm SD	47.2 \pm 19.1	53.7 \pm 17.6	59.9 \pm 14.9	52.9 \pm 18.1
Median [Min-Max]	50 (0-89)	55 (0-97)	60 [15-94]	55 [0-97]
LOS (days)				
Mean \pm SD	4.5 \pm 3.4	8.6 \pm 5.2	19.6 \pm 12.8	9.4 \pm 8.5
Median [Min-Max]	4 [1-29]	7 [1-43]	17 [2-57]	7 [1-57]
Nationality				
Kuwaiti	130 (93.5%)	229 (88.4%)	63 (72.4%)	422 (87.0%)
Non-Kuwaiti	9 (6.5%)	30 (11.6%)	24 (27.6%)	63 (13.0%)
Admission				
General ward	138 (99.3%)	245 (94.6%)	3 (3.4%)	386 (79.6%)
ICU	1 (0.7%)	14 (5.4%)	84 (96.6%)	99 (20.4%)
Disease Type				
Asymptomatic	8 (5.8%)	7 (2.7%)	10 (11.5%)	25 (5.2%)
Symptomatic	131 (94.2%)	252 (97.3%)	77 (88.5%)	460 (94.8%)
Discharge Status				
Recovered	121 (87.1%)	223 (86.1%)	12 (13.8%)	356 (73.4%)
Transfer to other hospital	1 (0.7%)	9 (3.5%)	21 (24.1%)	31 (6.4%)
DAMA	17 (12.2%)	25 (9.7%)	0 (0.0%)	42 (8.7%)
Died	0 (0.0%)	2 (0.8%)	54 (62.1%)	56 (11.5%)
Total	139 (28.7%)	259 (53.4%)	87 (17.9%)	485 (100%)

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409 **Table 2: Mean Cost and Length of Stay (LOS) of Covid-19 Patients by Severity**

Types of Severity	N	Mean LOS (SD) (days)	Mean Cost (KD)	SD (KD)	Mean Cost (US\$)	SD (US\$)
Mild	139	4.5 (SD=3.4)	1,064	795	3,526	2,635
Moderate	259	8.6 (SD=5.2)	2,024	1,233	6,708	4,086
Severe	87	19.6 (SD=12.8)	4,626	3,035	15,331	10,059
Averages	485	9.4 (SD=8.5)	2,216	2,018	7,344	6,688

410 Notes: SD = Standard Deviation
411 KD = Kuwaiti Dinar
412 US\$ = US Dollar
413 Average exchange rate in year 2021 (1 KD= 3.3142 US\$).
414

415 **Table 3: Mean Cost and Length of Stay (LOS) of Covid-19 Patients by General Ward and ICU**

Types of Admission	N	Mean LOS (SD) (days)	Mean Cost (KD)	SD (KD)	Mean Cost (US\$)	SD (US\$)
General Ward	386	7.1 (SD=4.9)	1670	1175	5,535	3,894
ICU	99	18.4 (SD=12.7)	4342	2992	14,390	9,916
Averages	485	9.4 (SD=8.5)	2216	2018	7,344	6,688

416 Notes: SD = Standard Deviation
417 KD = Kuwaiti Dinar
418 US\$ = US Dollar
419 Average exchange rate in year 2021 (1 KD= 3.3142 US\$).
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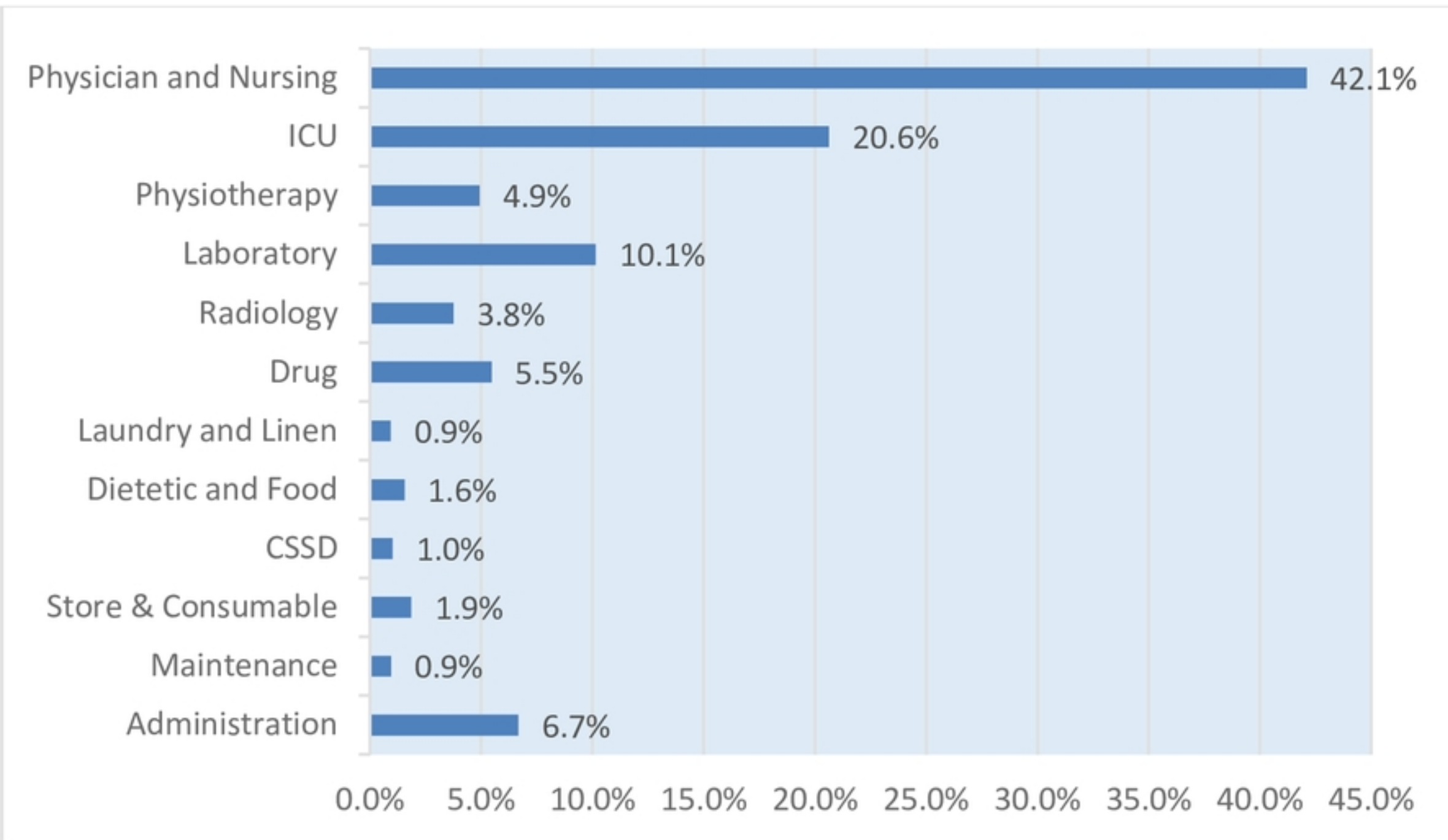
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431 **Table 4. Total Cost of Each Cost Component by Severe and Non-Severe of Covid-19 Patients**

Cost Component	%	Total Cost All Patient (n=485) (KD/US\$)	Mean Cost per Patient (KD/US\$)±(SD)	SD	Mean Cost per Non-Severe Patient (KD/US\$)±(SD)	SD	Mean Cost per Severe Patient (KD/US\$)±(SD)	SD
Administration	6.7%	71,479 (KD)	147 (KD)	134 (KD)	103 (KD)	68 (KD)	308 (KD)	202 (KD)
		236,896 (US\$)	487 (US\$)	444 (US\$)	341 (US\$)	225 (US\$)	1,021 (US\$)	669 (US\$)
Maintenance	0.9%	10,094 (KD)	21 (KD)	19 (KD)	15 (KD)	10 (KD)	43 (KD)	28 (KD)
		33,454 (US\$)	70 (US\$)	63 (US\$)	50 (US\$)	33 (US\$)	143 (US\$)	93 (US\$)
Store & Consumable	1.9%	20,325 (KD)	42 (KD)	38 (KD)	29 (KD)	19 (KD)	87 (KD)	57 (KD)
		67,361 (US\$)	139 (US\$)	126 (US\$)	96 (US\$)	63 (US\$)	288 (US\$)	189 (US\$)
CSSD	1.0%	11,186 (KD)	23 (KD)	21 (KD)	16 (KD)	11 (KD)	48 (KD)	32 (KD)
		37,073 (US\$)	76 (US\$)	70 (US\$)	53 (US\$)	36 (US\$)	159 (US\$)	106 (US\$)
Dietetic and Food	1.6%	17,057 (KD)	35 (KD)	32 (KD)	25 (KD)	17 (KD)	73 (KD)	48 (KD)
		56,530 (US\$)	116 (US\$)	106 (US\$)	83 (US\$)	56 (US\$)	242 (US\$)	159 (US\$)
Laundry and Linen	0.9%	9,958 (KD)	20 (KD)	19 (KD)	15 (KD)	9 (KD)	43 (KD)	28 (KD)
		33,003 (US\$)	66 (US\$)	63 (US\$)	50 (US\$)	30 (US\$)	143 (US\$)	76 (US\$)
Drug	5.5%	58,611 (KD)	121 (KD)	110 (KD)	84 (KD)	55 (KD)	252 (KD)	165 (KD)
		194,249 (US\$)	401 (US\$)	365 (US\$)	278 (US\$)	182 (US\$)	835 (US\$)	547 (US\$)
Radiology	3.7%	40,286 (KD)	83 (KD)	76 (KD)	58 (KD)	38 (KD)	173 (KD)	114 (KD)
		133,516 (US\$)	275 (US\$)	252 (US\$)	192 (US\$)	126 (US\$)	573 (US\$)	378 (US\$)
Laboratory (III)	10.2%	109,264 (KD)	225 (KD)	205 (KD)	157 (KD)	103 (KD)	470 (KD)	309 (KD)
		362,123 (US\$)	746 (US\$)	679 (US\$)	520 (US\$)	341 (US\$)	1558 (US\$)	1,024 (US\$)
Physiotherapy	4.9%	52,791 (KD)	109 (KD)	99 (KD)	76 (KD)	50 (KD)	227 (KD)	149 (KD)
		174,960 (US\$)	348 (US\$)	328 (US\$)	252 (US\$)	166 (US\$)	752 (US\$)	494 (US\$)
ICU (II)	20.6%	221,439 (KD)	457 (KD)	416 (KD)	318 (KD)	209 (KD)	953 (KD)	625 (KD)
		733,893 (US\$)	1515 (US\$)	1379 (US\$)	1,054 (US\$)	693 (US\$)	3,158 (US\$)	2,071 (US\$)
Physician and Nursing (I)	42.1%	452,154 (KD)	932 (KD)	849 (KD)	650 (KD)	427 (KD)	1,946 (KD)	1,277 (KD)
		1,498,529 (US\$)	3,089 (US\$)	2,814 (US\$)	2,154 (US\$)	1,415 (US\$)	6,449 (US\$)	4,232 (US\$)
Average Cost	100%	1,074,644 (KD)	2,216 (KD)	2,018 (KD)	1,544 (KD)	1,014 (KD)	4,626 (KD)	3,035 (KD)
		3,561,585 (US\$)	7,344 (US\$)	6,688 (US\$)	5,117 (US\$)	3,361 (US\$)	15,332 (US\$)	10,059 (US\$)

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Figure-1: The Percentage of Cost Component in Managing Covid-19 Patients



Notes: ICU = Intensive Care Unit

CSSD= Central Sterile Supply Department (CSSD)

Figure