



# Impact of the Covid-19 Pandemic on a Private Health Insurance

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## Abstract

**Background:** The covid-19 pandemic has affected the health insurance industry in numerous ways.

**Objectives:** The present study aimed to examine the impacts of the covid-19 on the referral times of insurance policyholders to hospitals and diagnostic centers throughout the country.

**Methods:** This was a cross-sectional descriptive study conducted on the data collected from a private insurance company. The statistical population included all insured individuals covered by the insurer in 31 provinces throughout the country who have used the services provided in hospitals and other diagnostic centers from March 21, 2019 to September 21, 2019 (1,699,930 insured people), considered as the pre-covid-19 incidence period, and from March 20, 2020 to September 20, 2020 (1,862,657 insured people), as the post-covid-19 incidence period. Data were analyzed using the SPSS and GIS statistical software.

**Results:** In the 2019 half-year, 10,416,591 medical expense records have been filed in the country, which decreased by 17.1% in the same period in 2020 to 8,633,613 records. The average referral times in the pre-covid-19 period was 7.02, which decreased by 32.9% during the post-covid-19 period, falling to 4.71.

**Conclusion:** The overall frequency of referrals to receive all services covered by the insurer, including visits, medicine, hospital services (general surgeries), and laboratory services in the post-covid-19 period decreased significantly, compared to a similar period in the previous year. It seems that in many different provinces, non-emergency patients avoided referring to healthcare centers and unnecessary visits to medical centers. Moreover, the number of general surgeries decreased because of the therapists' cautiousness and the changing behaviors of the patients, making diagnostic and medical services more real.

**Keywords:** Covid-19, Health insurance, Pandemic

## 1. Background

The coronavirus, known as covid-19, which has spread to every country, has won a high position in pandemic status. The World Health Organization announced the global pandemic of the virus on March 11, 2020 (1). The fast-spreading pace of the virus, compared to previous pandemics, led to a world record of banning travel and public gatherings, the closure of many enterprises and businesses, as well as the loss of jobs and lives of many people all around the world. Furthermore, the increased referrals of the covid-19 patients and their need for admission to hospitals led to an increased workload for the healthcare and health personnel, in addition to the increased costs imposed on the countries' health systems. These consequences made healthcare systems in different countries encounter numerous problems. The most important challenges of the healthcare systems in the course of the covid-19 crisis include inadequate perception of patients and a lack of enough information about the behaviors of the novel virus and its unknown etiology, the consequent outbreak of numerous symptoms and complications, difficulties in the supply of vaccine or any other special medicines to treat the disease, as well as a

shortage of personal protection utensils, such as gloves, face masks, and gowns (2).

Under these circumstances, people seek to protect themselves with the help of the insurance industry and governments all over the world. However, due to the fast-paced increase in the number of infected cases, compared to the improvement of the infected cases, the existing pandemic has put many governments under pressure and weakened the insurers financially (3). Lack of a timely diagnosis and delay in the intervention in covid-19 cases may lead to increased hospitalization. Hospitalization costs and high-severity claims put pressure on insurance companies.

The governments, the insurance industry regulators, and the insurance companies have generally focused on three realms, namely 1) ensuring the continuity of the operations, 2) managing the liquidity risks, and 3) supporting and protecting large numbers of insurers/policyholders, affected by the virus outbreak in their responsiveness to the impacts of covid-19. The measures taken worldwide to reduce the spread of the virus have obliged the insurers in most countries to present various plans for operational continuity through implementing preparatory measures associated with

the personnel's teleworking, providing services remotely, and promoting the utilization of advanced technologies. Managers in insurance companies also closely supervise the process of the internal operations of their businesses to make sure that the insurance policyholders and their dependents can access proper insurance coverage, and that they can easily collect their credits from insurance companies despite numerous bottlenecks caused by the existing conditions (4).

In the application provided by IcarbonX for its customers, each insurer can measure body temperature, heart rate, and blood oxygen level at any time with a thermometer and a Bluetooth wristband provided by the company. If the customer's corona test is positive, the insurance company will transfer the insured to the hospital by providing necessary facilities, such as a private ambulance, and will cover all members of his family with corona diagnosis and treatment insurance (5). Significant efforts were made to continue the operations by providing electronic services at insurance companies, which include the encouragement of insurers in Italy to establish electronic communications with clients (6), the provision of digital services in the United States (7), the announcement by the central bank of Russia addressing the insurers to ask them to disseminate the information about their working hours and to introduce their remote access facilities on their websites, reinforcement of digital infrastructures in Colombia (8), the minimization of face-to-face interactions at the insurance agencies through further use of digital channels, e-mail, and telephone in Singapore (9), and the policies adopted by Hong Kong Manulife concerning the coronavirus to meet the medical needs of customers, such as addressing claims related to corona in one working day and eliminating waiting times for customers (10).

Covid-19 can also leave important effects on the financial situation of insurance companies. The amount of losses has decreased in some cases due to job closures and staying at home; however, on the contrary, the magnitude of losses has increased for some businesses. Additionally, the significant uncertainty about the number of possible losses in some businesses, reduced revenues from insurance premiums, financial stress in the market, and increased loss claims can affect the liquidity of insurance companies (4). One of the possible impacts of this virus outbreak may be the effects on health insurance rates, as the incidence of covid-19 imposes massive costs on the country's health care system. Obviously, if the spread of this disease is not controlled quickly, it can lead to a significant increase in insurance premiums next year since this will be one of the most important variables determining next year's premium (11). On the other hand, insurance companies may provide significant

financial support in terms of delay in the payment of premiums and reimbursement to policyholders. Some companies may even voluntarily provide benefit packages to existing insurance policyholders or specific groups, such as healthcare professionals (4).

In Iran, in the initial regulations of health insurance approved by the Supreme Insurance Council in 1991, epidemic diseases were among the exceptions of private health insurance but this item has been removed from the exceptions after the elimination of tariffs by the Central Insurance and the possibility of offering rates by companies according to the performance and loss ratio of below 85%, and subsequently, approving the next regulations of health insurance (No. 74 in 1991 and No. 99 in 2019). However, private health insurance companies cover the consequences of the covid-19, which leads to the provision of medical, pharmaceutical, and inpatient services according to the existing regulations (12). Given that the outbreak of the coronavirus can affect businesses and health insurers in the country from different dimensions, it is likely that in the long run, the world faces an increase in sales to large policyholders and a relative increase in the number of claims due to the value-added growth and government budget in the field of health.

The number of claims and the loss coefficient of health insurances have fluctuated in recent years. The number of claims increased from 6,136,286 in 2011 to 52,521,740 in 2019. In other words, this variable grew by 755.92%. Therefore, these claims, which are expected to continue to increase in the coming years, require careful investigation, as well as optimal control and management. On the other hand, the loss coefficient of health insurance has increased from 100.5% in 2011 to 117.4% in 2013. Simultaneous with the implementation of the Health Transformation Plan, this variable initially had a decreasing trend and then increased significantly. In general, the field of health had a loss coefficient of more than 90%, which has made it necessary to pay attention to its conditions and requirements. The loss coefficient in 2019 and 2020 was 85.4% and 81.6% respectively (13).

In general, the spread of the covid-19 and measures taken in reducing its transmission would leave significant impacts on the insurance sector as the payer and provider of a variety of insurance coverage, and an influential business in the current situation. Therefore, conducting extensive studies on different extents of the effects of this novel virus can help managers and planners make decisions and implement applicable plans.

## 2. Objectives

The purpose of the present study was to assess

the impacts of the covid-19 pandemic on a private health insurance in Iran.

### 3. Methods

This was a cross-sectional descriptive-analytical study conducted on the data collected from a private insurance company. The statistical population in this study included all insured individuals covered by the insurer in 31 provinces throughout the country who used the services provided in hospitals and other diagnostic/remedial centers from March 21, 2019 to September 21, 2019 (1,699,930 insured people), considered as the pre-covid-19 incidence period and from March 20, 2020 to September 20, 2020 (1,862,657 insured people), as the post-covid-19 incidence period. Data were collected through a data-development form, encompassing variables, such as the total number of insured people and the total number of medical expense records, based on the type of services received. Regarding variables, the referral time of insurance policyholders to hospitals and other diagnostic centers throughout the country (the ratio of the total number of medical expense records to the total number of the insured) was calculated. The required data were collected by the insurer's business intelligence system and then analyzed by the GIS and SPSS statistical software. All ethical considerations were

respected during the data collection, analysis, and reporting stages.

### 4. Results

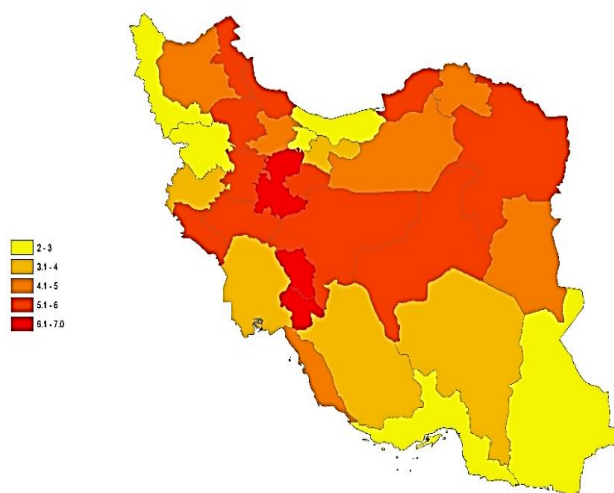
In the 2019 half-year, 10,416,591 medical expense records have been filed in the country, which decreased by 17.1 % in the same period in 2020 to 8,633,613. In general, the overall referral times created as a result of the demand to receive all categories of services under the insurer's coverage, hospital services (general surgeries), visits, medicines, medical requirements, and laboratory services were significantly reduced during the March to September 2020, compared to the same period in 2019 (Table 1).

#### 4.1. Referral times to receive total healthcare services

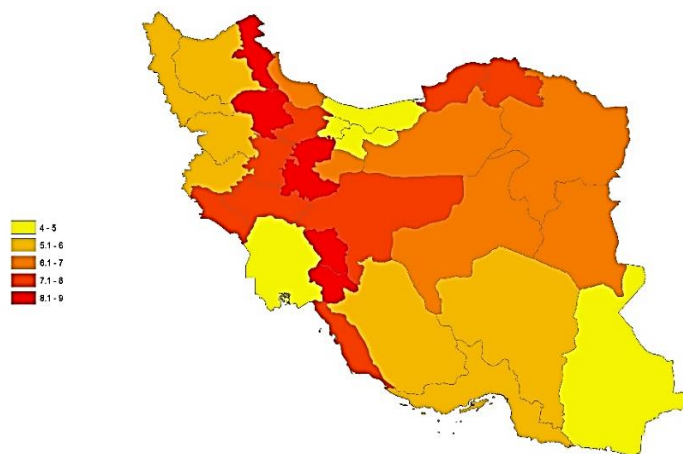
The average referral times throughout the country in the pre-covid-19 period was 7.02, which decreased by 32.9% during the post-covid-19 period, falling to 4.71. Chahar Mahal Bakhtiyari and Kohkiluyeh and Bouyer Ahmad provinces held the highest, and Sistan and Balouchestan and Mazandaran provinces held the lowest referral times in the 2020 half-year. In the same period in 2019, Chahar Mahal Bakhtiyari and Ardabil provinces appropriated the highest, while Sistan and Balouchestan and Mazandaran provinces had the lowest referral times (Figures 1 and 2).

**Table 1.** Referral times of insured people to receive health services during the 2019 and 2020 half-year

Service	Mean and standard deviation in 2019	Mean and Standard deviation in 2020	t	P-Value
Total referral times	7.02 (2.222)	4.71 (1.379)	10.951	<0.001
Laboratory	0.57 (0.126)	0.45 (0.094)	5.704	<0.001
Hospital	0.096 (0.028)	0.067 (0.146)	7.246	<0.001
Specialized surgeries	0.002 (0.001)	0.003 (0.002)	-1.089	0.285
Visits, medicine, and medical requirements	2.63 (0.923)	1.85 (0.577)	9.152	<0.001



**Figure 1.** Referral times of insured people to receive healthcare services in 2020

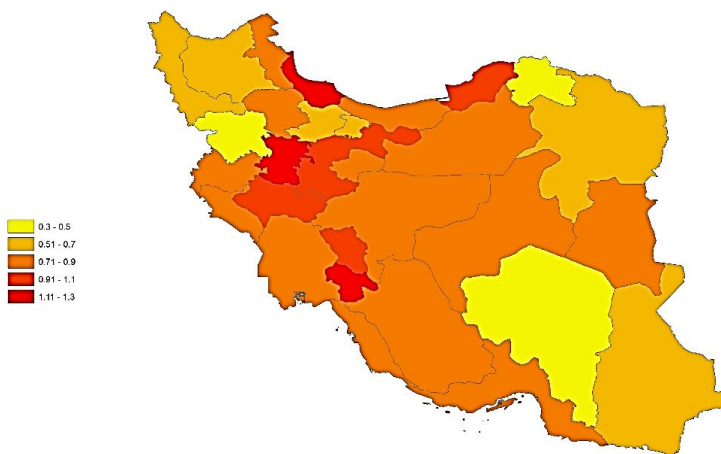


**Figure 2.** Referral times of insured people to receive healthcare services in 2019

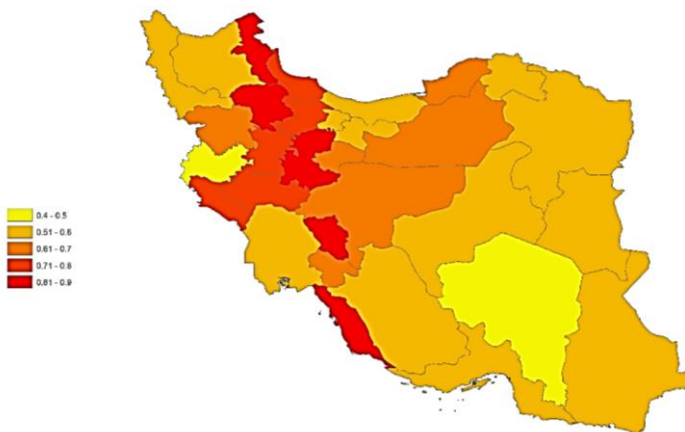
**4.2. Referral times to receive laboratory services**

The average referral times throughout the country to receive laboratory services in the half-year of 2019 was 0.57, while it was 0.45 during the same period in 2020 (21% decrease). Hamadan and Kohkiluyeh and Bouyer Ahmad provinces had the

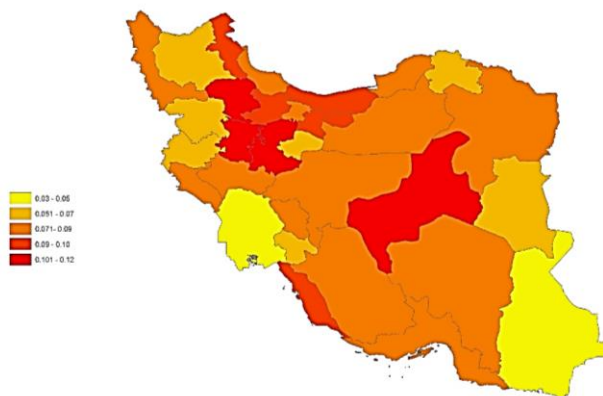
highest, and North Khorasan and Kordestan provinces had the lowest referral times in the 2020 half-year. In the same period in 2019, Chahar Mahal Bakhtiari and Bushehr provinces had the highest, while Kermanshah and Kerman provinces had the lowest referral times (Figures 3 and 4).



**Figure 3.** Referral times of insured people to receive laboratory services in 2020



**Figure 4.** Referral times of insured people to receive laboratory services in 2019

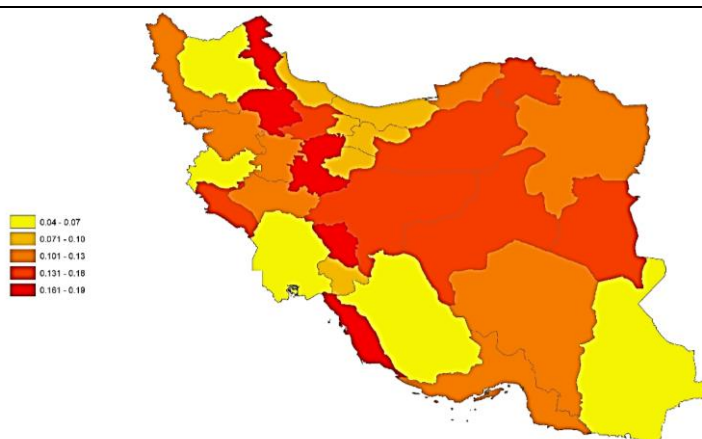


**Figure 5.** Referral times of insured people to receive hospital services in 2020

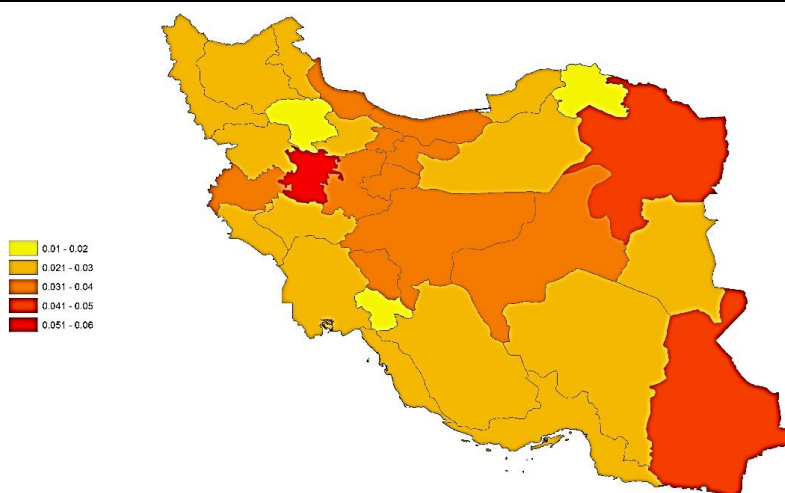
**4.3. Referral times to receive hospital services (general surgeries)**

The average referral times to receive hospital services (general surgeries) from March to September 2019 and 2020 were 0.096 and 0.067, respectively (a 30.2% decrease). Markazi and Yazd

provinces had the highest, and Khuzestan and Sistan and Balouchestan provinces had the lowest referral times in the 2020 half-year. In the same period in 2019, Chahar Mahal Bakhtiari and Ardebil provinces had the highest, while Khuzestan and Kermanshah had the lowest referral times (Figures 5 and 6).

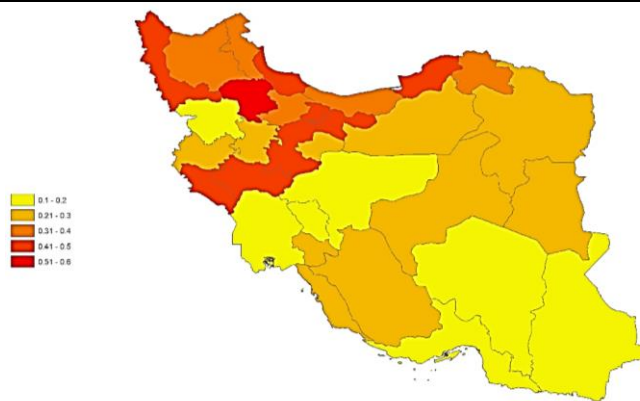


**Figure 6.** Referral times of insured people to receive hospital services in 2019



**Figure 7.** Referral times of insured people to receive specialized surgery services in 2020





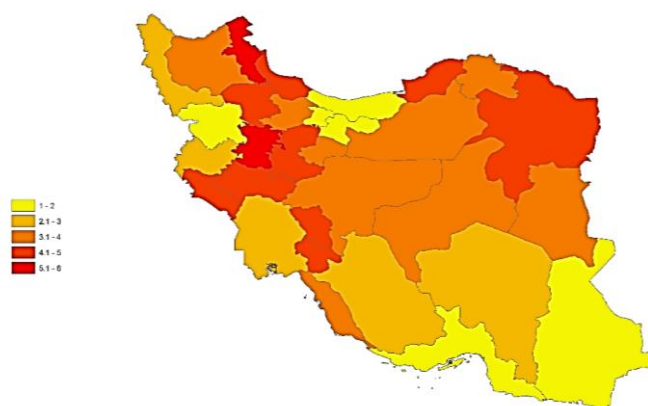
**Figure 8.** Referral times of insured people to receive specialized surgery services in 2019

**4.4. Referral times to receive specialized surgery services**

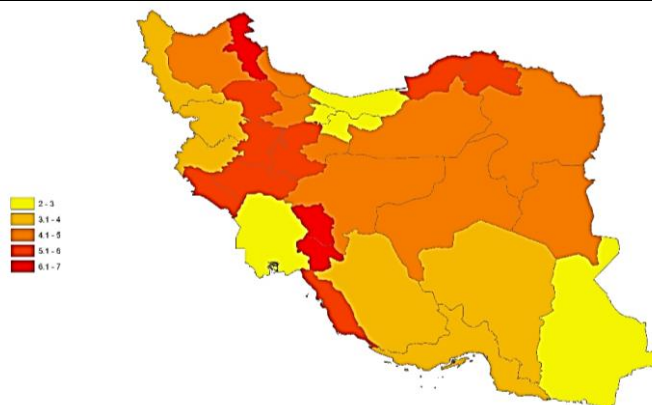
The average referral times to receive specialized surgery services was 0.002 in 2019, while it was 0.003 in the same period in 2020 (a 50% increase). Hamadan and Sistan and Balouchestan provinces had the highest, and North Khorasan and Kohkiluyeh and Bouyer Ahmad provinces had the lowest referral times in the 2020 half-year. In the same period in 2019, Zanjan and Golestan provinces had the highest, while Kerman and Chahar Mahal Bakhtiari provinces had the lowest referral times (Figures 7 and 8).

**4.5. Referral times for visits, medicine, and medical requirement services**

The average referral times to receive visits, medicine, and medical requirements was 2.63 from March to September in 2019, and 1.85 in the same period in 2020 (a 29.7% decrease). Hamadan and Ardebil provinces had the highest, and Sistan and Balouchestan and Mazandaran provinces had the lowest referral times in the 2020 half-year. In the same period in 2019, Chahar Mahal Bakhtiari and Ardebil provinces had the highest, while Sistan and Balouchestan and Mazandaran provinces had the lowest referral times (Figures 9 and 10).



**Figure 9.** Referral times of insured people to receive visits, medicine, and medical requirement services in 2020



**Figure 10.** Referral times of insured people to receive visits, medicine, and medical requirement services in 2019

## 5. Discussion

This study aimed to assess the impact of the covid-19 pandemic on the referral times of insured people to receive healthcare services. The results showed that the nationwide insurance policyholders' referrals to receive services, including hospital services (general surgery), laboratory, visits, medicine, and medical requirements, were reduced significantly after the covid-19 pandemic. The overall referral time was also reduced, compared to a similar period in the year before the outbreak of the coronavirus pandemic. In a way, non-emergency patients avoided referring to healthcare centers throughout the country, and the rate of unreal referrals to medical centers, as well as the number of general surgeries, were reduced due to the cautiousness of therapists and the patients' fear, making the reported diagnostic and remedial services figures more real. Surgeries are divided into emergency and non-emergency. Therefore, it is possible to postpone non-emergency actions during the covid-19 pandemic. However, the results of the study showed that in the case of specialized surgeries, the rate of surgeries increased insignificantly during the covid-19, which may be due to the importance of immediate treatment in patients' survival.

Despite the reduced referral times for receiving a set of services, some people still unnecessarily go to medical centers, driven by their concerns about the coronavirus infection. Increasing public awareness and learning important information about the coronavirus disease can enhance public health status and stop duplicated pressure on medical personnel. Regarding the spread of the covid-19 in different cities of the country, people should avoid interurban trips and protect their health by observing healthcare and medical advice. Unnecessary referrals to healthcare centers would not only increase the possibility of infection but may impose avoidable expenses on individuals and the health system. In addition, they can increase the losses of health insurance companies. Therefore, reviewing the expenditures of insurance companies seems necessary for studying the impacts of the covid-19.

Based on the existing reports, it is anticipated that the premiums for health insurance would increase by 4% to 40%. Therefore, insurers should prepare themselves for encountering the impacts of the increased loss coefficient on profitability and liquidity (14). The insurers will be impacted differently by the outbreak of the covid-19 virus depending on different factors, such as liquidity, their available portfolio, or the extent of their reliance on reinsurance. Despite this fact, under conditions where the spread of the virus is yet continuing, insurance companies should pioneer in their

responsiveness or reaction ahead of the pandemic and its consequences and stay alert at all times (3). The insurance companies can create preparatory strategies covering immediate responses, continuing the activities, and enhancing their crisis management to respond to the crises of communicable diseases, such as the covid-19. They should also formulate plans for continuing the activities by the advanced capability of supervising the course of the disease spread and understanding its potential impacts. The insurers must know how to react under critical situations and make necessary changes in their insurance policies so that they keep their clients satisfied while having risk management solutions at hand (4).

With a risk management team, the insurance company would be effectively responsive to the crisis, especially during the pandemic. Insurance companies should also consider complementary measures, such as loss monitoring and management. Insurers may also establish multitask decision-making units in the course of this pandemic.

They should provide their clients with correct and updated information by establishing a comprehensive communication system to update the staff, clients, and other beneficiaries with relevant information. These companies should also consider the impact of their staff's absence and ensure their welfare in the continuation of service provision and compensation for shortages caused by their absence at the workplace, alongside other challenges (3). The insurers should also provide ideal conditions for their staff's activities outside the workplace so that the organizational information is specifically available to them with maximum security on different platforms. It seems necessary to utilize video conferences and provide training sessions on how to hold the meetings with access to a strong information technology backup team to answer the staff questions. The companies are expected to be equipped with strong operational systems and adequate controls to continue their activities under the current conditions and to behave professionally and honestly focusing on their clients' interests. Moreover, insurance companies should ensure that relationships with their clients take place based on transparency. Regarding the high volume of tests and therapies carried out to treat the covid-19, which would impose many expenses on people, healthcare systems, and insurance companies, and considering that the permanence of the virus pandemic would increase the demand for new insurance services, it is imperative for insurance companies to take novel products into consideration. The high volume of corona tests and related treatments will impose huge costs on people, healthcare systems, and insurance companies. On the other hand, with the continuation of the virus epidemic, people's demand for new

services and insurance coverages related to the covid-19 will increase. Therefore, insurance companies need to offer new types of medical coverage considering the needs of their customers. One of the best ways to meet the needs of customers and deal with the negative effects of the outbreak is to launch and promote electronic and digital sales of insurance policies (11).

Finally, collective cooperation of various beneficiaries, such as the ministry of health, the insurance industries, the banking sector, the police, and customs, is required to suppress the coronavirus pandemic. In general, global improvement depends on the severity of the pandemic and the extent of the international community's preparedness against the virus.

## 6. Conclusion

The overall frequency of referrals to receive all services covered by the insurer, including visits, medicine and medical supplies, hospital services (general surgeries), and laboratory services in the post-covid-19 period, decreased significantly, compared to a similar period in the previous year. It seems that in many different provinces, non-emergency patients avoided referring to healthcare and medical centers, as well as unnecessary visits to medical centers, and the number of general surgeries decreased because of the therapists' cautiousness and changing behaviors of the patients, making diagnostic and medical services more real.

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## Footnotes

**Conflicts of Interest:** The authors declare no competing interests.

**Authors' Contributions:** S.R. and P.K. developed the review protocol and designed search criteria and strategy. S.R. and M.A. contributed to searching, performing the title/abstract, screening the records, extracting data, and writing the manuscript. A.M. provided general supervision at all stages and commented on the paper draft. All authors have read and approved the manuscript.

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