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Contingency management and planning for decision-making in a hospital facility during COVID-19

Gestão e planejamento contingencial para tomada de decisão em uma organização hospitalar na Covid-19

Gestión y planificación contingente para la toma de decisiones en una organización hospitalaria en el Covid-19

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ABSTRACT

Objective: to describe the strategic management decision-making process of a healthcare facility providing care during the COVID-19 pandemic. **Method**: this qualitative study, approved by the Institutional Review Board, was implemented in a Brazilian hospital, a referral facility for patients with COVID-19. Interviews were held with 27 managers who worked during the pandemic. Discursive Textual Analysis was adopted using Iramuteq. **Results**: six semantic classes were described to clarify the work dynamics of managers and the challenges related to the managerial performance structure, the multi-professional decision-making process, the psychological, occupational, human, psychosocial, technical, and logistics aspects of supplies, and organizational structure dynamics. **Conclusion**: arduous working days encouraged the workforce to cooperate and strengthen interpersonal relationships, becoming an engaged and cohesive combat front through decision-making.
Descriptors: COVID-19; Hospital Administration; Answering Service; Decision Making.

RESUMO

Objetivo: descrever o processo de tomada de decisão da gestão estratégica de uma organização de saúde ao implantar um serviço de atendimento para Covid-19. **Método**: estudo de abordagem qualitativa, aprovado pelo comitê de ética e pesquisa, desenvolvido em um hospital brasileiro que, na pandemia, foi referência para pacientes com Covid-19. Realizou-se entrevista com 27 gestores que atuaram nesse contexto. Utilizou-se a análise Textual Discursiva, com uso do *software* Iramuteq. **Resultados**: foram descritas seis classes semânticas que elucidaram a dinâmica de trabalho dos gestores e os desafios enfrentados, relacionados à estrutura da performance gerencial, ao processo de tomada de decisão multiprofissional, aos aspectos psicológicos, laborais, humanos, psicossociais, técnicos, de logística de suprimentos e de dinâmica da estrutura organizacional. **Conclusão**: a árdua jornada laboral instigou as forças de trabalho a cooperar e fortalecer as relações interpessoais formando uma frente de combate engajada e coesa, através do processo de tomada de decisão.
Descritores: COVID-19; Administração Hospitalar; Serviço de Atendimento; Tomada de Decisões.

RESUMEN

Objetivo: describir el proceso de toma de decisiones de la gestión estratégica de una organización de salud al implantar un servicio de atención para Covid-19. **Método**: estudio de abordaje cualitativo, aprobado por el comité de ética e investigación, desarrollado en un hospital brasileño que, en la pandemia, fue referencia para pacientes con Covid-19. Se realizaron 27 entrevistas con gestores que actuaron en ese contexto. Se utilizó el análisis Textual Discursivo, con uso del *software* IRAMUTEQ. **Resultados**: fueron descritas seis clases semánticas que elucidaron la dinámica de trabajo de los gestores y los desafíos enfrentados, relacionados a la estructura de la performance de gestión, al proceso de toma de decisiones multiprofesional, a los aspectos psicológicos, laborales, humanos, psicosociales, técnicos, de logística de suministros y de la dinámica de la estructura organizacional. **Conclusión**: la ardua jornada laboral motivó a las fuerzas de trabajo a cooperar y fortalecer las relaciones interpersonales, formando un frente de combate comprometido y cohesivo, a través del proceso de toma de decisiones.
Descriptores: COVID-19; Administración Hospitalaria; Servicios de Contestadora; Toma de Decisiones.

INTRODUCTION

The emergence of a new virus in December 2019 in the Chinese city of Wuhan, which the World Health Organization (WHO) named Severe Acute Respiratory Syndrome coronavirus type 2 (SARS-CoV-2) alarmed the world population due to its rapid spread[1]. On March 11, 2020, the COVID-19 pandemic, whose agent was the new coronavirus, was declared[2]. The sudden increase in COVID-19 cases worldwide and the overcrowding of hospital services led to the most severe health crisis of this century. Promptness to respond to contingencies was vital for controlling the pandemic and enabling patients to recover[3].

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Pandemic proportions challenged the decision-making process of healthcare organizations, requiring them to restructure to meet emerging patient demands[4]. Many of these hospital organizations had to adapt to the contingencies, which required health authorities to find scientific alternatives to support decision-making in the fight against the pandemic[5].

In this sense, decision-making was highly challenging due to supply restrictions, logistics problems, and financial limitations[6]. The rapid spread and severity of cases requiring Intensive Care Unit (ICU) services also worsened the process, rendering it highly exhaustive and laborious. Various strategies were discussed and tested to achieve an ideal plan to meet the immediate demands, culminating in real-time decision-making, which enabled the coordination of conduct and actions in that context[7].

Thus, this study's contribution lies in the relevance of this topic and the need to further explore the decision-making process during crises, considering that incidents such as COVID-19 haunt the globalized world. The management strategies and processes adopted during the pandemic have the potential to improve knowledge and should be used by health managers.

In this context, the objective was to describe the decision-making process of a healthcare facility's strategic managers when implementing a COVID-19 care service.

METHOD

The Institutional Review Board at the proponent institution approved the research protocol according to recommendations and legal guidelines regulating research in the Human and Social Sciences, ensuring the rights and duties of the study's participants, members of the scientific team, and the States[8].

This qualitative, descriptive, and exploratory study, conducted in April 2023 at a federal university hospital in southern Brazil, was guided by the Standards for Reporting Qualitative Research: a Synthesis of Recommendations (SRQR)[9] checklist.

The participants were managers and employees composing a COVID Response Committee (CRC) during the pandemic. Inclusion criteria were having been appointed to the (CRC) and part of the hospital's technical staff. In contrast, exclusion criteria included being on maternity or sick leave or not participating in the decision-making process during the COVID-19 pandemic. This study's population comprised members of the (CRC) appointed from January to July 2020, reaching 34 members who remained until the end of institutional activities. Members who were no longer in the organization or were inaccessible were excluded from the sample; hence, 27 participants remained, and 7 were excluded.

Data were collected in person through a semi-structured interview according to the schedule agreed upon with the participants. Next, the interviews were transcribed verbatim into Word Office®; the participants were identified by the CRC acronym, followed by a sequential number corresponding to the order in which the interviews were held, to ensure the confidentiality of their identities. This data collection method was chosen to capture as much relevant information as possible[10].

The responses were submitted to the *Analyses Multidimensionnelles de Textes et de Questionnaires (IRAMUTEQ)*, which showed the most recurring and relevant information from a large volume of text, ensuring robust and reliable data processing. The Descending Hierarchical Classification (DHC) was composed of three stages: the first consists of preparing and coding the text, the second refers to the classification performed by processing data, and the last comprises the interpretation of the emerging classes.

A textual corpus structured in Libre Office® was used and grammatically reviewed. The terms and compound words or words related to each other were standardized and, due to their significance, were underlined so they would be unified and accounted for in the analytical report. Afterward, the document was archived in textual software using UTF-8 (Unicode Transformation Format 8-bit code units). The questions were removed, and only the complete answers remained[11].

DHC analysis was used to organize data. Conjunctions, adverbs, and prepositions were removed from the filter as they were irrelevant to statistics; hence, two groups subdivided into 6 semantic classes emerged. Thus, the groups were subjected to Discursive Textual Analysis (DTA) to describe the themes discussed in each semantic class[12].

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The interval called (x) defined by chi-square represented by (x^2) was standardized for the results, with significance established at p-value<0.0001. The cut-off criterion was being relevant within the DTA, leading to a representative number of words describing each class.

RESULTS

The 27 interviews resulted in 27 texts organized in one file, from which 27 Initial Context Units (ICUs) emerged. These were later separated by command lines (**** *CRC1 to **** * CRC 27) to account for all the ICUs and classify them into Elementary Context Units (ECUs).

The textual corpus comprised 27 ICUs, fragmented into 1884 text segments (TS), and 1758 TS (93.31%) were used. There were 65,630 occurrences (words, forms, or vocables), 5,403 distinct words, and 2,550 (47.20%) words that appeared only once.

The results are presented as follows: Group I - Structure of managerial performance, extracted from class 2 with 328 TS (18.66%), delimited by the CHI^2 interval [123.09 ≤ x ≥ 33.3]; Multidisciplinary decision-making process, extracted from class 3 with 219 TS (12.46%), delimited by the CHI^2 interval [240.04 ≤ x ≥ 30.98]. Group II - Dynamics of the organizational structure of care in the context of decision-making, extracted from class 1 with 364 TS (20.71%), delimited by the CHI^2 range [125.41 < x > 33.3]; Psychological and occupational aspects in the decision-making process, extracted from class 4 with 261 TS (14.85%), delimited by the CHI^2 range [87.38 < x > 14.86]; Human and psychosocial aspects in the decision-making process, extracted from class 5 with 381 TS (21.67%), CHI^2 range [166.14 < x > 18.12]; Technical and logistical aspects of supplies in the context of decision making, extracted from class 6 with 205 TS (11.66%), CHI^2 range [137.21 < x > 31.3]. Data are organized in the dendrogram presented in Figure 1.

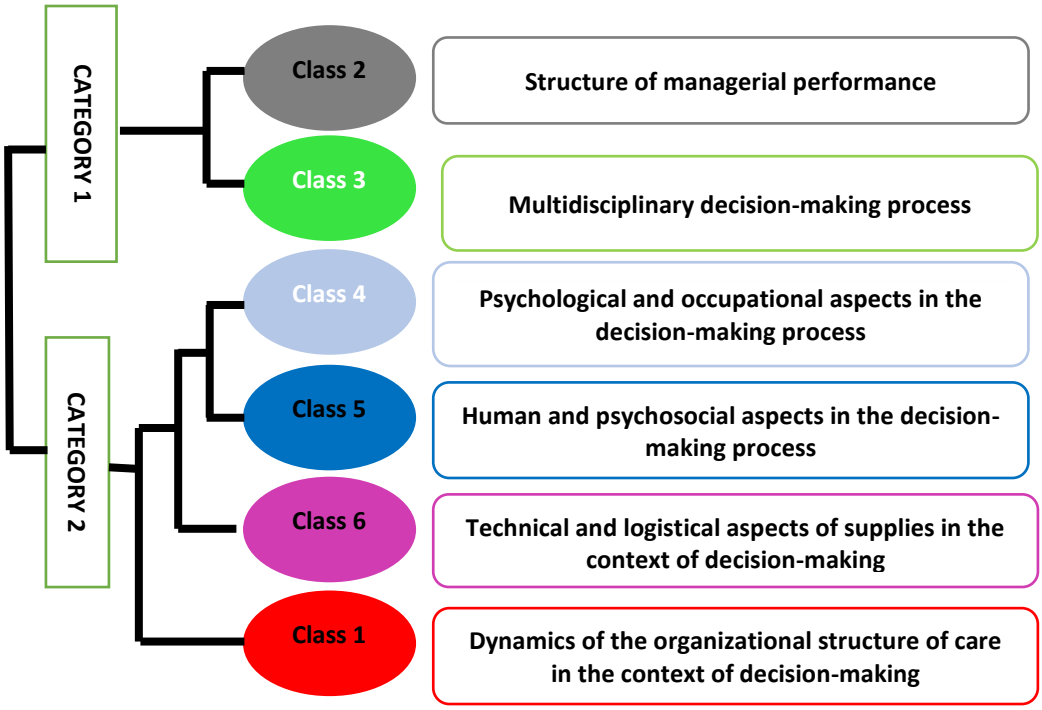

Figure 1: Dendrogram of the classes obtained by IRAMUTEQ. Rio Grande, RS, Brazil, 2023.

Each class originated from a set of related words due to their significance within the respective theme, obtained through DTA. The program generated the selected word groups, which are represented in Figure 2 in descending order from the highest to the lowest significance level within the textual corpus.

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Figure 2: Dendrogram with percentage of TS in classes and words in descending order of chi-square (X^2) within the chosen significant interval, according to IRAMUTEQ software. Rio Grande, RS, Brazil, 2023.

Class 2 – Structure of managerial performance

Class 2 contextualizes the institution's managerial performance, characterizing the need to obtain knowledge through newsletters. Health authorities remained distant, which was quite notable, showing that sharing information on a network encouraged the creation of management models at critical times.

> *Our greatest source of knowledge was informative data from the few technical bulletins that arrived [...] my heaviest criticism is that I and everyone else who participated and saw it; the performance, I mean the lack of technical information from the Ministry of Health. I think that each institution was very alone in making decisions [...]. The role of EBSERH, of 40 hospitals sharing knowledge, was crucial and very important. (CRC2)*

> *We did not have adequate technical support from the Ministry of Health. Basically, the states and cities conducted the process, while the Ministry of Health remained mainly silent, unlike the EBSERH. (CRC5)*

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Class 3 - Multidisciplinary decision-making process

The decision-making process was built with the multi-professional participation of COVID Response Committee (CRC) members, who expressed their opinions and discussed matters until reaching a consensus.

> *Decisions were made by a multi-professional team, everyone was heard [...] each person brought their own opinion of that problem. (CRC7)*

> *The decision-making process [...] was multidisciplinary [...] the problem or a possible solution or idea would be discussed by the group, [...] and you'd reach the best consensus. (CRC8)*

Class 1 - Dynamics of the organizational structure of care in the context of decision-making

As for the organizational dynamics, the institution adapted its units to meet needs according to the guidelines shared across the hospital network. The contingency plan included structural modifications to meet the increased demand, a reality in most parts of the facility.

> *The surgical clinic became a COVID-19 Ward. The surgical beds were transferred to the traumatology ward, [...] then even our ICU became a COVID-19 unit, the ER became a COVID-19 unit too [...] Minor surgeries were suspended, remained idle for a while [...] We did a [...] we reorganized the units. (CRC6)*

> *We had to modify doors to ensure patients would remain isolated and placed an EPA filter in all rooms to minimize the risk of spreading the virus to professionals and patients. The logistics of isolating this ward to the point where there were no people besides those working. (CRC19)*

Class 4 - Psychological and occupational aspects in the decision-making process

The following aspects emerged in the work environment: teamwork, unity, empathy, and professional resilience, essential for strengthening professional relationships, encouraging the staff to make decisions and serve the population assertively. Also noteworthy is evidence related to the fear of the unknown.

> *We managed to get [...] the workers to stay united and help each other to serve the population [...]. And I think this resulted from the committee's decisions [...]. Because, no matter how bad the situation was [...] these nursing workers, doctors, technicians, and the cleaning staff embraced the work together. (CRC1)*

> *Much of the situation was unknown [...] a matter that was permeated by people's fear. (CRC14)*

> *Another thing is that you have to face a team that is afraid, insecure, desperate [...] people were scared [...] without exceptions. Every time an employee left the pediatric ICU to help in the COVID-19 ward [...], they'd return terrified [...] by the situation. (CRC15)*

Class 5 - Human and psychosocial aspects in the decision-making process

Teamwork, partnership, being able to sensitize a colleague in critical times promoted respect, communication, and commitment among workers to follow the protocols and took precautions to deal with a virus that spread very easily.

> *Communication [...] From one shift to the next [...]. Having empathy and care for each other. Because if someone was not using PPE correctly, that person could [...] become infected and transmit the virus to the rest of their colleagues. (CRC3)*

> *We also learned to have a moment of great partnership [...]. Everyone tried to get closer to finding a solution. It was an effort to strengthen the company's teamwork. (CRC11)*

Class 6 - Technical and logistical aspects of supplies in the context of decision-making

In this class, elementary factors in the construction of the decision-making process and the development of strategies that guided the care services, including supply management, the rational use of PPE, and the contingencies faced to acquire essential items for protection, prevention, and treatment of the disease.

> *We [...] used it very rationally [...] because there was a huge shortage in the market worldwide; we couldn't even buy it; these were critical times. (CRC22)*

> *We modified some of our processes and significantly revised the number and capacity of what to keep in stock. (CRC02)*

> *There were times when we were expecting to receive materials, but the supplier was unable to deliver it [...] the management always provided support in these cases [...] if a critical item was to lack [...] we'd have some margin to make another emergency acquisition here in the region. (CRC11)*

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DISCUSSION

The context of a pandemic is a universe from which hospital managers can learn, given the need to obtain knowledge to implement strategies and deal with new incidents. Hence, such a situation requires resilience in hospital management, which can be described as the initiative of an organization to change, to equip itself with solid contingency plans to enable agile and high-performance responses to face large-scale contingencies[13]. Therefore, it is not feasible to manage a collective decision-making process supported by scientific evidence from previous events, especially at the global level, where the union of forces makes management maneuvers more versatile, strengthening actions to combat new challenges[14,15].

In this sense, decision-making is a process of analysis and choice characterized by the exhaustive acquisition of information about a given problem to solve. Such information must be examined and compiled to find alternatives to manage and meet emergent needs. Hence, decisions must be deliberated based on pre-defined criteria, situational context, and the available alternatives[16,17].

Furthermore, Simon's theory on bounded rationality, which discusses the restrictions on human cognitive capacity amid constant changes in the organizational environment, explains the decision-making stages and the need for synthesizing and simplifying decision-making processes. Simon defines steps in which the first phase is collecting information when the problem is clearly and precisely identified by clarifying the facts. The second stage, called structuring, concerns listing viable alternatives and weighing advantages and disadvantages to achieve a satisfactory answer. The third stage, called choice, is when the best option is selected according to the information and context in which it is inserted, and finally, the decision is implemented[16].

Hence, this study's analysis of the semantic classes enabled the identification of elements of Simon's model. Class 2 concerns the structure of managerial performance typified in the information collection phase when it was possible to compile knowledge and strategic alternatives for fighting COVID-19 through network information shared between the organizations.

Thus, the need to fight SARS-CoV-2 required rethinking health organizations' strategic planning and how promptly these organizations were able to deal with future health contingencies. Hence, the pandemic was a territory rich in learning opportunities. Although the pandemic was a downhearted scenario, the lessons learned encouraged new studies to reformulate and innovate hospital management and health policies[18].

Note that the complexity and uncertainty involved in decision-making demand finding optimal alternatives. Therefore, the current objective is to find simple but satisfactory alternatives16,17. Multidisciplinary consensus and multi-professional decision-making were critical elements in the decision-making process described in class 3, which was permeated by democratic stances. These led to decisions that favored effectiveness and assertiveness, which were connected with the structuring stage, where information and potential actions were organized and effective.

From a global perspective, a study conducted in Saudi Arabia stands out. It shows that Saudi managers' initiative to listen to the multidisciplinary team's suggestions concerning adaptations and strategies to meet the pandemic contingencies was fundamental for the institution's performance. Armed with information, the strategic leadership planned the actions and began redesigning the hospital to the point of becoming a referral COVID-19 facility[19].

Moreover, healthcare facility management must evaluate complex factors and conflicting situations in times of crisis when making decisions. Weighing risks and opportunities may lead decision-makers in different directions, even when robust, already-tested models exist. Risk management requires a thorough and insightful information analysis, considering all scientific and non-scientific factors to assess a situation and make decisions[20].

Decision-making in crisis situations involves stressful factors, even more so when it poses a risk to people's integrity. In this sense, research on decision-making was crucial to encourage thinking about different scenarios and complexity levels. Another factor that complicates the decision-making process is the need for prompt and practical actions, while. Additionally, the fact that such decisions concern health care delivery intensifies and requires caution. Although many studies discuss crisis management, they are limited to past contexts, rendering planning to be uncertain in the face of the numerous potential catastrophic events[21,22].

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Class 1 shows that intra-hospital structural changes were fundamental to organizing care delivery and serving the population, which can be related to the "choice" stage of the decision-making process described by Simon[16].

Thus, hospital facilities depend on the forecast of material, equipment, human resources, and information systems, considering known usual flows and demands, allowing coordination of the logistics of supplies with financial flows. However, events such as COVID-19 destabilize routine operations, demanding emergency adaptations to meet increasing demands. It is noteworthy that a glimpse into how the various health institutions made these adaptations, modified their structures, and reorganized their resources to improve their service capabilities is a remarkable learning experience that needs to be measured, listing the most efficient models that deserve to be replicated, considering that pandemic events may repeat in the future[23,24].

The lessons learned during this pandemic highlight leadership and coordination skills, which are linked to the mastery of human resources and were fundamental to facing contingencies. The work teams' motivation in times of discouragement and physical fatigue, the exceptional increase of professionals recruited nationally and internationally, and intensive training strengthened the frontline workers combating SARS-CoV-2. Such actions enabled the overcoming of the most critical times of the pandemic[25]. These representations can be related to class 4, which shows critical psychological elements in implementing decisions within the scope of the choice stage proposed by Simon.

Additionally, professionals fighting the COVID-19 pandemic showed signs of emotional and psychological distress and occupational stress, as well as anxiety, depression, and fear of being infected and transmitting it to family and friends. Stressful shifts and little rest heightened such fear. Hence, the pandemic impacted all aspects of life, thus the need for adequate psychological support measures as these psychological changes can compromise mental health[26,27].

In this sense, the psychosocial elements described in class 5 show evidence that the union among the workers was paramount for maintaining the work activities and implementing actions related to the choice stage and consequent implementation of decisions.

Furthermore, the fear of COVID-19 triggered numerous psychological disorders in the population worldwide, being associated with a greater prevalence of depression, stress, sadness, poor sleep quality, worse perceived health, and suicidal ideation. These findings highlight the multiple impacts of the COVID-19 pandemic on society and individual health28. Global disruptions caused by the pandemic have deeply shaken healthcare professionals, with overwhelming effects on mental health and the work environment, considering the deaths and suffering caused by COVID-19. Furthermore, there might be long-term impacts, such as pandemic fatigue due to the exhaustion of the workforce and occupational diseases[26,29].

Furthermore, the management material and supply logistics described in class 6 and intrinsic to the choice stage represented one of the greatest challenges during decision-making, requiring the reorganization of processes and directions in the search for a satisfactory choice in the context.

In the meantime, classes 1, 4, 5, and 6 previously discussed highlight behavioral elements, proactivity, and resilience. They are also interconnected and complete the choice stage that defines the decision-making process, enabling the implementation of actions in the praxis of the organization.

Among the various challenges that the hospital's top administration faced during COVID-19, perhaps the most prominent is the structural challenge, which shows the health system's fragility, with a lack of equipment, ineffective supply logistics, and inadequate physical structure to meet the challenges of an event of such proportions. The cultural difficulties marked by government officials' disbelief in the dimension of SARS-CoV-2 caused delays in implementing actions to control and organize workflows. Additionally, educational challenges highlighted the individualism of managers who initially adopted strategies disconnected from the context of the pandemic[30].

Therefore, new hospital facilities built to meet the demands during the pandemic were designed based on previous experiences with catastrophes. They enabled expanding the number of beds and staff training, the development of workflows, and the adequate equipping of service units. Decision-making intended to deal with such contingencies was challenging due to supply restrictions, logistics problems, and financial restrictions; however, the quick decision to expand the fronts to combat this adverse event was crucial to success[6].

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CONCLUSION

Note that the decision-making process can be characterized from a dynamic, holistic perspective, highlighting the following aspects: the structure of managerial performance and the mechanisms to supply sources of knowledge to support decision-making was implemented from a multidisciplinary perspective. Such an aspect strengthens interpersonal relationships and teamwork, highlighting network management.

Additionally, there are nuances in the dynamics of the organizational structure, which focused on patient care, supported decision-making, and guided professional conduct under the coordination of the local infectious disease service and its theoretical-scientific framework, ensuring robustness and safety for all those involved.

Furthermore, psychological, occupational, human, and psychosocial aspects characterize and influence decision-making, considering that uncertainties and lack of knowledge cause panic and despair, harming work routines and patient care. Finally, we emphasize the supplies' technical and logistical aspects, which were crucial and inseparable from the decision-making process, and the managers' concern with the need to ensure the supply of material resources and medications, considering the market shortage, controlling the demand according to the need for internal distribution.

In summary, the arduous working days during the pandemic encouraged the workforce to cooperate and strengthen interpersonal relationships, forming an engaged and cohesive combat front through a democratic, directed, cohesively supported decision-making process based on technical and scientific aspects. The workers did not become discouraged; even when facing negative results, instead, they rose to the occasion and continued to provide services.

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