Impact of the COVID-19 pandemic on blood donation: An integrated review

Impacto da pandemia COVID-19 na doação de sangue: Uma revisão integrativa

Impacto de la pandemia de COVID-19 en la donación de sangre: Una revisión integradora

RESUMO

Objetivo: analisar as evidências científicas sobre o impacto da pandemia COVID-19 na doação de sangue e as medidas adotadas para superar o contexto atual. Método: trata-se de uma revisão integrativa, que utilizou a estratégia PICo para construção da pergunta de pesquisa. Foram utilizadas as seguintes bases para extração dos dados: Embase, PubMed/MEDLINE, SciELO, Scopus, Web of Science. As buscas foram realizadas de março a maio de 2021, abrangendo artigos publicados até esse período. Resultados: foram analisados 20 estudos que atenderam aos critérios de inclusão. Eles apontam que o impacto negativo da pandemia COVID-19, na doação, deu-se por períodos de bloqueio e medo de contrair o vírus, com isso medidas foram adotadas para superar a escassez de produtos sanguíneos. Conclusão: as evidências demonstram que a pandemia COVID-19 impacta negativamente nas doações, pelo declínio na procura dos doadores aos hemocentros, sendo necessária implementação de medidas para assegurar o suprimento de sangue.

DESCRITORES: Doadores de Sangue; Serviço de Hemoterapia; Avaliação do Impacto na Saúde; COVID-19; Pandemia.

ABSTRACT

Objective: to analyze the scientific evidence on the impact of the COVID-19 pandemic on blood donation and the measures adopted to overcome the current context. Method: this is an integrative review, which used the PICo strategy to construct the research question. The following bases were used for data extraction: Embase, PubMed/MEDLINE, SciELO, Scopus, Web of Science. The searches were conducted from March to May 2021, covering articles published up to this period. Results: 20 studies that met the inclusion criteria were analyzed. They point out that the negative impact of the COVID-19 pandemic, on donation, was due to periods of lockdown and fear of contracting the virus, so measures were adopted to overcome the shortage of blood products. Conclusion: the evidence shows that the COVID-19 pandemic has a negative impact on donations, due to the decline in donor demand for blood centers, requiring the implementation of measures to ensure the blood supply.

DESCRIPTORS: Blood Donors; Servicio de Hemoterapia; Evaluación del Impacto en la Salud; COVID-19; Pandemias

RESUMEN

Objetivo: analizar la evidencia científica sobre el impacto de la pandemia de COVID-19 en la donación de sangre y las medidas adoptadas para superar el contexto actual. Método: se trata de una revisión integradora, que utilizó la estrategia PICo para construir la pregunta de investigación. Para la extracción de datos se utilizaron las siguientes bases: Embase, PubMed/MEDLINE, SciELO, Scopus, Web of Science. Las búsquedas se realizaron entre marzo y mayo de 2021, abarcando los artículos publicados hasta ese periodo. Resultados: Se analizaron 20 estudios que cumplieron con los criterios de inclusión. Señalan que el impacto negativo de la pandemia de COVID-19, en la donación, se debió a los periodos de confinamiento y al miedo a contraer el virus, por lo que se adoptaron medidas para superar la escasez de hemoderivados. Conclusión: la evidencia muestra que la pandemia de COVID-19 tiene un impacto negativo en las donaciones, debido a la disminución de la demanda de donantes para los centros de sangre, lo que requiere la implementación de medidas para garantizar el suministro de sangre.

DESCRIPTORES: Blood Donors; Hemotherapy Service; Health Impact Assessment; COVID-19; Pandemics

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INTRODUCTION

Blood donation is a voluntary, spontaneous and altruistic act in the national territory. The World Health Organization (WHO) recommends that 3 to 5% of the population of a country donate blood each year, ensuring the supply of blood and blood products and avoiding potential risks to the lives of those who need this resource. [1]

Based on the COVID-19 pandemic scenario, due to the systemic repercussions caused by the Sars-CoV-2 virus, hygiene and social isolation measures were adopted in order to control infection rates. In this context, interventions include the isolation of positive cases for COVID-19, both from the infected person and from household contacts, hygiene of hands and objects, use of face masks, new breathing habits and social distancing, such as quarantine and lockdown. [2]

The aforementioned conducts had a significant impact on blood donation services, which underwent changes in the supply and demand of blood components. The prevalence of blood diseases and surgical procedures demand support from hemotherapy services, but the impacts brought by the COVID-19 pandemic had a direct impact on blood donations, as a consequence of the requirement of social isolation and the fear of contamination. [3]

Due to the increase in life expectancy, non-communicable chronic diseases, increase in the number of car accidents and health technologies, the use of blood products transfusion has been a therapy widely used in secondary and tertiary care services.

In order for a transfusion to take place, a donation is required. The entire blood donation process takes around 40 minutes. To be a donor, the basic requirements to be considered include being in good health, being between 16 and 69 years old, having a minimum weight of 50 kilos, being fed and avoiding fatty foods in the previous three hours.[3]

In order for a transfusion to take place, a donation is required. The entire blood donation process takes around 40 minutes. To be a donor, the basic requirements to be considered include being in good health, being between 16 and 69 years old, having a minimum weight of 50 kilos, being fed and avoiding fatty foods in the previous three hours.[3]

On the other hand, despite the implemented measures, there was a significant drop in the maintenance of blood components stock, caused by high demand and scarce supply of donors in hemotherapy services. [4]

In view of this context, it was observed that blood donation in the COVID-19 pandemic emerged a new problem to be investigated, as it is a current issue and that may provide a basis for the adoption of strategies for future adverse situations.

In this context, this review aimed to analyze the scientific evidence on the impact of the COVID-19 pandemic on blood donation, and the measures adopted to overcome the growing need for blood donation.

METHOD

This is an integrative review that summarizes the results obtained in research on the investigated topic. This method occurs in a systematic, orderly and comprehensive way, and makes it possible to explore preexisting knowledge. [5]

For the elaboration of this integrative review, six steps were completed, namely: identification of the theme and research question; establishment of criteria for inclusion and exclusion, definition of information to be extracted from selected studies; evaluation of included studies; interpretation of results; and presentation of the review/synthesis of knowledge. [5]

In the construction of the research question, the PICo strategy was used, which considers the population or the patient or the problem, the phenomenon of inte-

rest and the context. [6]

Thus, the following strategy was defined for the study:

P: Blood donation;
I: Impact and measures adopted;
Co: COVID- 19. Pandemics

This strategy allowed us to elaborate the following research question: What is the impact of the COVID-19 pandemic on blood donation and what measures are adopted?

After establishing the question, an initial search was performed on the PubMed portal of the National Library of Medicine, to identify the main descriptors and keywords used in studies that addressed the topic of interest in this review.

Then, the descriptors found in the articles of the researched bases were selected for consultation in DECS (Descriptors in Health Sciences) and MeSH (Medical Subject Headings), being designated according to the components of the PICo strategy. Descriptors in Portuguese and English were considered, as follows: P: hemotherapy service, blood transfusion, blood, hemotherapy; I: impact; Co: coronavirus infections, coronavirus, COVID-19 pandemic, COVID-19, coronavirus disease.

The descriptors were delimited according to each database. To combine them, the Boolean operators AND (restrictive combination) and OR (additive combination) were used. The following databases were used to select the studies: Embase, US National Library of Medicine/ National Institutes of Health (PubMed/ MEDLINE), Scientific Electronic Library Online (SciELO), SciVerse Scopus, Web of Science.

The following inclusion criteria were defined: articles published in Portuguese, English or Spanish; articles published in 2020 and 2021; articles published in national and international journals; studies with a quantitative and qualitative approach that address the issue of the possible impact of the COVID-19 pandemic on hemotherapy services and the measures adopted in blood donation.

Table 1 – Description of the PICo search strategy, Presidente Prudente, SP, Brazil, 2021.

Databases	Search strategy
EMBASE	'blood transfusion' AND 'coronavirus disease 2019' AND impact
PubMed	((("Hemotherapy"[All Fields] AND ("service"[All Fields] OR "services"[All Fields] OR "serviced"[All Fields] OR "services"[All Fields] OR "services s"[AHemotherapyll Fields] OR "servicing"[All Fields])) OR "blood centres"[All Fields] OR ("blood transfusion"[MeSH Terms] OR ("blood"[All Fields] AND "transfusion"[All Fields]) OR "blood transfusion"[All Fields])) AND "covid 19 pandemic"[All Fields]
Scielo	"hemoterapia" OR serviços de hemoterapia AND coronavirus OR "infecções por coronavírus" OR promoção de saúde
Scopus	(hemotherapy) OR (blood AND centres) AND (covid-19 AND pandemic) AND (impact))
Web of Science	(Hemotherapy) OR TÓPICO: (blood centres) AND TÓPICO: (COVID-19 pandemic) AND TÓPICO: (IMPACT). Tempo estipulado: 2020-2021

Source: Authors, 2021.

Exclusion criteria were: information from books and/or chapters, description of studies from integrative, systematic reviews of the literature and/or meta-analysis, as well as reflection articles.

The searches in the databases were carried out from March to May 2021, covering articles published until that period, and using a time frame between 2020 and 2021. The Zotero software was used to manage the references in the databases.

Regarding the analysis and extraction of data, based on the PICo strategy, a spreadsheet was prepared in the Microsoft Excel 2019® program, based on the instrument proposed by Ursi and Galvão (2006), [7] contemplating the following items: study identification number, year, title, main author, country, language, study objectives, level of evidence, impact of the COVID-19 pandemic, on blood donations and measures adopted.

Three independent reviewers extracted information from selected studies. In case of discrepancies, they would be discussed and resolved between the researchers or forwarded to a fourth reviewer. The references of the selected studies were checked to see if they could be eligible for this review.

For hierarchical classification of the evidence of the studies, the criteria proposed by Stetler et al. (1998) [8] : Level 1: evidence resulting from the meta-analysis of multiple randomized controlled clinical trials; Level 2: evidence obtained from individual studies with an experimental design; Level 3: evidence from quasi-experimental studies; Level 4: evidence from descriptive studies (non-experimental) or with a qualitative approach; Level 5: evidence from case reports or experience and Level 6: evidence based on expert opinions.

In the evaluation of the methodological quality, the adapted instrument Critical Appraisal Skills Program (CASP) was applied to the included studies. This instrument has 10 scoring items, including: 1) Objective, 2) Adequacy of the method, 3) Presentation of methodological procedures, 4) Sample selection, 5) Thorough data collection, 6) Relationship between researcher and researched, 7) Ethical consi-

derations, 8) Rigorously analyzing data, 9) Credibility in the discussion of results and 10) Contributions, limitations and needs for further research. After the evaluation, the study can be classified as level A (6 to 10 points), featuring good methodological quality and reduced bias; or level B (up to 5 points), with satisfactory methodological quality, however with risk of bias. [9]

RESULTS

The search in the selected databases identified 514 studies, of these 20 (100%) studies answered the research question. The stages of the search and selection process of studies are shown in Figure 1, adapted from PRISMA.

Most of the studies found were published in the Embase databases, with eight articles (40.0%) and PubMed also with eight articles (40.0%), followed by Scielo one article (5.0%), Scopus one (5.0%), and finally, in Web of Science, with two (10.0%).

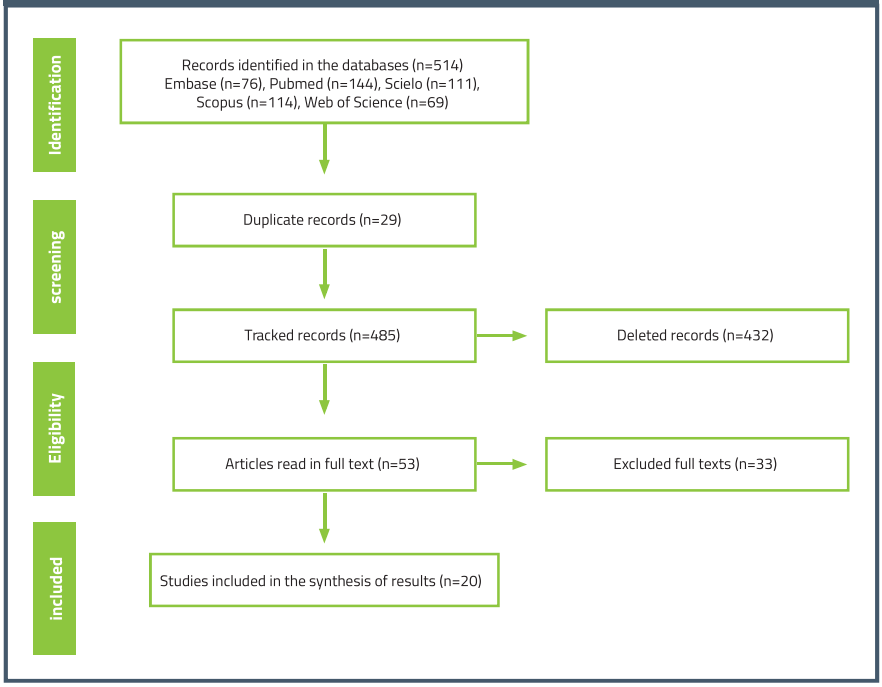
All studies were published in English. Regarding the countries of publication, the continents were found: Asian (n=8, 40.0%), American (n=5, 25.0%), African (n=4, 20.0%) and European (n=3, 15.0%).

Table 2 presents an overview of the studies included according to the adaptation of the Ursi and Galvão model (2006), [7] with the general characteristics: article number, title, year, database, country/language, objective, type of study and level of evidence.

Regarding the level of evidence, of the 20 studies, 19 (95%) presented classification 4, which consists of evidence from descriptive studies (non-experimental) or with a qualitative approach. Only one article (5%) scored level 5, dealing with evidence from case reports or experience.

As for CASP, 7 it was found that eight studies (40%) obtained level B (up to 5 points), indicating adequate methodological quality, but with risk of bias. On the other hand, 11 studies (55%) were classified at level A (from 6 to 10 points), indicating the highest level of methodological quality and reduced bias. On the other hand, the aforementioned instrument does not apply to E4 (5%), as it is an experience report.

Figure 1 - Flowchart of the process of Identification, selection, inclusion and exclusion of studies prepared based on the PRISMA recommendation, Presidente Prudente, SP, Brazil, 2021.



Source: Authors, 2021

Related to the impact of the COVID-19 pandemic on blood donation, most studies (E1, 10 E2, 11 E3, 12 E4, 13 E5, 14 E6, 15 E7, 16 E8, 17 E10, 19 E12, 21 E13, 22 E14, 23 E15, 24 E16, 25 E18, 27), mentioned that periods of lockdown such as lockdown, quarantine and social isolation issued by local governments and published on social media, culminated in the restriction of the population's circulation, and consequently a lower demand for blood centers for donation, which led to a significant reduction in the number of blood donations.

Another item that was evidenced in several studies was that the population did not seek hemotherapy services due to anxiety and fear of contracting COVID-19, during the journey to the place and at the time of the procedure (E1, 10 E2, 11 E3, 12 E4, 13 E5, 14 E7, 16 E8, 17 E9, 18 E11, 20 E12, 21 E15, 24 E18, 27 E19, 28 E20, 29). Table 3 contains the factors that impacted blood donations and associated studies.

Regarding the measures adopted in the face of the COVID-19 pandemic, a series of measures were proposed to overcome the blood shortage during that context, with each country acting according to its resources and needs. The studies E1, 10 E3, 12 E4, 13 E6, 15 E7, 16 E8, 17 E10, 19 E11, 20 E13, 22 E14, 23 E15, 24 E17, 26 E18, 27 E19, 28 E20, 29 addressed the use of safety measures such as hand hygiene, mask use, social distancing, collection chairs and body temperature measurement before entering the service.

Altruistic motivation campaigns and incentives through the media (E1, 10 E2, 11 E3, 12 E4, 13 E5, 14 E7, 16 E8, 17 E9, 18 E11, 20 E13, 22 E15, 24 E17, 26 E20, 29), were important measures in most studies. Table 4 presents the measures adopted in the context of the COVID-19 pan-

Quadro 2 Características gerais dos estudos incluídos na revisão integrativa. Presidente Prudente, SP, Brasil, 2021

No.	Authors/ Year	Database	Country/ Language	CASP*	Level of Evidence	Objective
E1	Chandler T, Neumann--Böhme S, Sabat I, Barros PP, Brouwer W, van Exel J, et al/ 2021	Embase	Germany English	A	4	To provide an initial insight into blood donation activity in seven European countries and the motivation of blood donors to donate or not to donate during the first phase of the COVID-19 crisis.10
	Pandey HC, Coshic P, C S C, Arcot PJ, Kumar K/2020	Embase	Índia Inglês	A	4	Compartilhar experiências e o efeito de várias políticas adotadas no hemocentro.[11]
E2	Pandey HC, Coshic P, C S C, Arcot PJ, Kumar K/2020	Embase	India English	A	4	Share experiences and the effect of various policies adopted at the blood center. 11
E3	Maghsudlu M, Eshghi P, Amini Kafi-Abad S, Sedaghat A, Ranjbaran H, Mohammadi S, et al/ 2021	Embase	Iran English	B	4	Review the trend of blood donations and blood supply during the COVID-19 pandemic in Iran and report on actions taken by the National Committee for the Management of the COVID-19 Outbreak. 12
EE4	Hu P, Kang J, Li Y, Li X, Li M, Deng M, et al/ 2020	Embase	China English	D/A	5	Demonstrate the emergency response of a Chinese blood center in maintaining, securing the blood supply during large and emerging epidemics. 13
EE5	Silva-Malta MCF, Rodrigues D de OW, Chaves DG, Magalhães NNS, Ribeiro MA, Cioffi JGM, et al /2020	Embase	Brazil English	A	4	To verify the impact of the COVID-19 pandemic on blood donor care, collection and production, as well as deferral and return of blood donation candidates in the first half of 2020 at Hemominas when compared to an institute historical series from 2016 to 2019. 14
EE6	Wang Y, Han W, Pan L, Wang C, Liu Y, Hu W, et al/2020	Embase	China English	A	4	Assess the impact of the COVID-19 pandemic on blood donation and supply in Zhejiang Province. 15
EE7	Loua A, Kasilo OMJ, Nikiema JB, Sougou AS, Kniazkov S, Annan EA/2021	Embase	Congo Republic English	B	4	Discuss the impact of the COVID-19 pandemic on blood supply and demand in the African Region and propose measures to address the challenges faced by countries as a result of the pandemic. 16
EE8	Yahia AIO/2020	Embase	Saudi Arabia English	A	4	Analyze donor care and blood demand, with the aim of finding efficient ways to manage blood supply and demand during the COVID-19 pandemic. 17
EE9	Ogar CO, Okoroiwu HU, Obeagu EI, Etura JE, Abunimye DA /2021	PubMed	Nigeria English	A	4	To assess the effect of the pandemic on blood supply and blood transfusion at the University Hospital of the University of Calabar. 18
EE10	Ngo A, Masel D, Cahill C, Blumberg N, Refaai MA /2020	PubMed	USA English	B	4	Address how the COVID-19 pandemic has affected blood banks, including the safety of blood donors and recipients of blood products, the management and distribution of blood products. 19
EE11	Noordin SS, Yusoff NM, Karim FA, Chong SE / 2021	PubMed	Malaysia English	B	4	Discuss the impact and suggest best practices for blood transfusion services in this era of new norms. 20
EE12	Okoroiwu HU, Okafor IM, Asemota EA, Ogar CO, Uchendu IK/ 2021	PubMed	Nigeria English	A	4	Discuss the situation of blood transfusion in the West African region in the pre-COVID-19 period and analyze the capacity to respond to demand during the pandemic, as well as discuss a possible panacea to improve services. 21
EE13	Al Mahmasani L, Hodroj MH, Finianos A, Taher A / 2021	PubMed	Lebanon English	B	4	Identify measures taken to overcome the shortage of blood products and propose the role of plasma therapy in the treatment of patients with COVID-19. 22

EE14	Arcot PJ, Kumar K, Mukhopadhyay T,Subramanian A / 2020	PubMed	India English	B	4	Discuss potential challenges a blood bank may face and appropriate long-term measures. 23
EE15	Al-Riyami AZ, Abdella YE, Badawi MA, Panchatcharam SM, Ghaleb Y, Maghsudlu M, et al/ 2021	PubMed	France English	A	4	Assess the situation in the Eastern Mediterranean Region (EMR) during the first months of the pandemic. 24
EE16	Gehrie E, Tormey CA, Sanford KW / 2020	PubMed	USA English	B	4	Highlight best practices that emerged during the pandemic, with a focus on blood supply management and blood bank operations. 25
EE17	Souza MKB de / 2020	Scielo	Brazil English	A	4	Discuss the consequences of social distancing measures on the availability of blood and the organization of hemotherapy services at the beginning of the pandemic in Brazil. 26
EE18	Gniadek TJ, Mallek J, Wright G, Saporito C, AbiMansour N, Tangazi W, et al / 2020	Scopus	USA English	B	4	To describe the outcome of measures taken to expand a hospital blood donor collection program during the beginning of the COVID-19 pandemic in the US.27
EE19	Raturi M, Kusum A / 2020	Web of Science	France English	A	4	Study the blood collection pattern, demand and problem before and during the COVID-1 outbreak, and gain crucial lessons for blood supply management, both now and in the future. 28
EE20	Tagny CT, Lendem I, Ngo Sack F, Ngo Balogog P, Ninmou C, Dongmo A, et al/ 2020	Web of Science	Cameroon English	A	4	To describe the impact of the pandemic on the number of blood donations in Cameroon, and to assess the level of knowledge, practices and expectations of donors regarding the pandemic. 29

Source: Authors, 2021.
CASP* Critical Appraisal Skills Programme. D/A Does not apply

demic and associated studies.

DISCUSSION

The analysis of the findings made it possible to verify that, in most of the selected articles, with the exception of study E9, [18] There was a significant reduction in the number of blood donations during the COVID-19 pandemic, which represents an alarming situation worldwide, however several measures were adopted with the aim of reversing this emerging and urgent need.

In the pandemic context, the impact on blood donations was determined by the following factors: social distancing, lockdown, quarantine, fear of contracting the virus, distance to blood centers and reduced opening hours of donation centers. According to the study carried out in Hong Kong, China, [15] Anxiety and fear of contracting COVID-19 were the main

Table 3 Studies analyzed regarding the impacts on blood donation. Presidente Prudente, Brazil, 2021.

Impact on blood donations and associated studies	f
Lockdown periods such as lockdown and quarantine and social isolation (E1, E2, E3, E4, E5, E6, E7, E8, E10, E12, E13, E14, E15, E16, E18);	15
Anxiety and fear of contracting COVID-19 (E1, E2, E3, E4, E5, E7, E8, E9, E11, E12, E15, E18, E19, E20);	14
Decrease in donation campaigns and educational activities (E2, E12, E15, E20);	4
Inconvenient location of donation sites and inefficient logistics, being distance to centers and interruption of transport services (E6, E7, E9, E14);	4
Closing of donation units (E1, E14, E17);	3
Canceling mobile donation locations (E4, E8, E11);	3
Material and financial resource challenges faced by countries (E7);	1
Uncertainty related to the normal functioning of donation services (E1);	1
More rigorous selection of donors (E14).	1

Source: Authors, 2021.

obstacles to blood donation, which was also found in the other articles analyzed as the most relevant factor for the non-attendance of donors to the collection points. [10-11-12-13-14-16-17-18-20-21-24-27-28-29]

Although the donor services of the countries involved in this study were affected by the pandemic, it was observed that the severity of the crisis and the response of the authorities were not similar, as in most West African countries, [14] there was an absence or non-implementation of blood policies and contingency plans in situations of instability.

Although blood donation was significantly affected in most countries, there was a smaller repercussion in the study developed in Nigeria, since there was a drop in blood donations of approximately 26.1%, being proportional to the 18.9% reduction in the request for this resource, caused by the decline in hospital admissions and in cases of traumatic injuries. [21]

From this perspective, coping measures, during the pandemic in relation to blood donations, had to be adopted to meet the demand and scarcity, given the indispensability of maintaining blood components to save lives. Thus, hemotherapy services have widely sought the adoption of new marketing and communication tactics, aiming at maintaining the blood supply and satisfying the population's health needs.

In this context, the measures commonly suggested and implemented to mitigate the aforementioned adversity include the postponement of elective surgeries, alternative times for donation, altruistic motivation campaigns, mobilization through social networks, messages and letters, safety measures (use of mask, gel alcohol, distancing, temperature measurement), online service and prior donation scheduling. Still, there were studies, [12,19-21,26-27] which highlighted the need to implement new protocols, policies and guidelines to adapt to the reduced blood supply.

In Brazil, several technical notes with recommendations were issued by the National Health Surveillance Agency, in order to guide hemotherapy services on clinical screening and ensure transfusion safety. These recommendations are related to the risk of infection by SARS-CoV-2 and the criteria of temporary inability for candidates to donate. [30]

Table 4 - Measures adopted in view of the context and associated studies. Presidente Prudente, Brazil, 2021.

Measures adopted in the context and associated studies	f
Safety measures: hand hygiene, mask use, social distancing and collection chairs, body temperature check (E1, E3, E4, E6, E7, E8, E10, E11, E13, E14, E15, E17, E18, E19, E20);	15
Campaigns of altruistic motivation and encouragement through the media (E1, E2, E3, E4, E5, E7, E8, E9, E11, E13, E15, E17, E20);	13
Availability of mobile donation vehicles and free transport (E5, E6, E7, E8, E9, E11, E12, E13, E15, E17);	10
Recruitment through short messages via SMS, cell phone calls, and sending emails (E4, E5, E6, E7, E8, E11, E12, E15, E18, E20);	10
Disinfection of the environment, furniture and equipment (E3, E4, E6, E10, E14, E16, E17);	7
Pre-schedule online donation (E3, E4, E5, E6, E15, E17, E20);	7
Postponement of elective surgeries and procedures (E2, E6, E8, E10, E13, E16);	6
Maintain a list of volunteer donors (E2, E5, E7, E9, E18, E19);	6
Adoption of protocols, policies and coping guidelines (E3, E10, E12, E17, E18);	5
New deferral criteria for patients who test positive for COVID-19 (E3, E4, E6, E11, E15);	5
Flexibility in the opening hours of blood centers (E1, E5);	2
Free COVID-19 Trial as an Incentive (E1).	1

Source: Authors, 2021.

The pandemic caused by the coronavirus disease has presented the health sector with urgent needs regarding contingency plans in the face of adverse situations. It should be noted that COVID-19 is a disease whose sequelae are still being mapped, however, the long periods of hospitalization caused as a result of it have increased the need for greater stocks of blood components. Thus, it appears that blood donation is an urgent public health problem that needs attention by the control bodies.

Regarding the evaluation of methodological quality and the hierarchical classification, it is possible to highlight some limitations, although most studies have been evaluated with good quality, most of the studies are still only descriptive that portray the reality of local services. However, such initiatives are important to mediate policies in the face of blood shortages in epidemic situations..

It is inferred, therefore, that strategies to maintain the blood supply and avoid a shortage during the COVID-19 pandemic and other such circumstances need to include the protection of staff and blood donors. As implications for practice, some studies highlighted good results to overcome the effects of the pandemic on donations, however, even after adopting these measures, it is important to examine the

feasibility of the proposals adopted and create contingency plans to face adverse situations.

CONCLUSION

According to the findings, it is evident that the epidemiological situation of COVID-19 had a negative impact on blood donations, both in availability and stock, and in the demand of donors to blood centers. Under this bias, it is clarified in the studies that measures are necessary to ensure the blood supply, while ensuring the safety of the donor and the team, in addition to meeting the needs of the health system.

Although there is research on COVID-19, this topic demands in-depth knowledge, especially regarding the understanding of the impacts of blood donation and coping measures.

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