Review Paper

Ethics in the micro-allocation of resources during a sanitary emergency: a systematic review

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ABSTRACT

The allocation of scarce resources during the pandemic is lined with various ethical challenges. Thus, amidst the scarcity of resources in health care, some severity scoring systems as the APACHE and SOFA, amongst others, have been receiving attention as tools for predicting mortality during the pandemic, and it is likely health care services use them for triage. This study aims to analyze research articles on the use of severity scoring systems for the allocation of resources in ICUs to analyze the implicit or explicit ethical justifications associated with these decisions. Due to the diverse methodologies used by the selected studies, we are relying on the SWiM (Synthesis Without Meta-Analysis) reporting guideline as a supplement to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for this systematic review. The protocol approved for this review can be verified at PROSPERO under id CRD42020214029. There is no consensus on the best scoring system to be used, not even for those studies that prioritize the specificity and sensibility analysis of such tests. Thus, with the data analyzed, fair-choice criteria could not be grounded. Therefore, there is no consensus on the fair distribution of scarce health care resources based on equity. This will also be reflected during sanitary emergencies. We defend the participation of communities that will be directly affected by such allocation in validating the possible consensus and implementing this consensus as impartially and fairly as possible.

Keywords: Bioethics; Health Care Rationing; Equity in the Resource Allocation; Emergency Medicine; Systematic Review.

Introduction

The pandemic caused by Sars-Cov-19 has highlighted problems that have long existed and were known by the public health sectors of several countries worldwide, especially those of the Global South, which already faced significant inequality in access to health care. Dire situations of scarce resources demanded health care professionals to make complex and challenging decisions that called for the allocation of essential resources to keep patients alive. Deciding who should receive the necessary treatment to the point of saving a life is inevitable, given that in the context of sanitary emergencies, demands exceed the supply of material and professional resources.

In general, utilitarianism imposes itself, and its focal point is saving the most significant number of lives possible. This principal looms around the question that forces one to ask which lives truly have a chance of being saved. On the other hand, equity differs from utilitarianism. It also considers factors pertaining to the layers of vulnerability for the distribution of resources based on an understanding of social justice. The criteria and processes for allocation became recurring discussions in academia and the communication channels during the new coronavirus pandemic. However, we still have not reached a consensus that contemplates the patient beyond his or her biology and in a fair manner.

Qualitative research published in August 2020 attempted to describe the development of fair policies for triage of mechanical ventilators by interviewing 67 directors of bioethics programs in hospitals in the United States and Canada [1]. As a result, it was observed that the most widely used triage criteria more frequently included: benefits and clinical needs determined by SOFA, age, and preservation of resources and lottery, for which 80% of respondents used some scoring system as the SOFA to ground their allocation. It is also worth noting that more than half of the persons interviewed did not have any triage policy in place to allocate resources during this pandemic [1].

To foster an understanding of how the debate on the allocation of scarce resources is discussed in specialized literature, this systematic review has collected primary research articles that used some severity scoring system for the allocation of patients in an ICU or for the use of mechanical ventilators to analyze the implicit or explicit ethical justifications related to such choices. Many of these articles are used as the basis for guidelines of important institutions and are strongly diffused in the medical community. Thus, they can lead to the reproduction of injustices and gaps that ensue when the ethical weighting is not established for allocation decisions.

Methodology

For the characteristics of the topics addressed during our review, we looked for primary articles with reports of studies that used various methodologies but including the debate on the scores for the prognosis and allocation of scarce health care resources. In these moments of pandemics, health professionals follow several guidelines based on using these scores as a screening criterion to optimize resources in an ICU.

Due to the methodological diversity of the eligible articles for this review, we used the SWiM reporting guideline as an extension of the PRISMA [2]. We grouped some characteristics corresponding to population, context, and results to analyze them. Therefore, we expect that the findings of such reports can be translated into possible ethical implications explored by the authors during the debate on the use of prognosis scores for the triage of patients. All of the justifications for this methodological diversity in the research designs and details were reported in our protocol published in PROSPERO under identification number CRD42020214029.

Our PICOT (*Population, Intervention, Comparison, and Outcome*) strategy included the following process for the definition of this review: P (adult patients in ICU/Hospital emergency rooms regardless of gender; I (medical prognosis scores); C (without comparison); O (micro-allocation of scarce resources in clinical practice); T (observation, transversal, qualitative and randomized studies). Two reviewers (RLS, LB) selected titles independently, and any doubts or differences between the selections were settled by consensus after analyzing a third, more experienced reviewer (SR). The databases for the search included relevant academic databases in health: Scopus, Embase, Lilacs via BVS, Medline via PubMed, Web of Science, and grey literature. The grey literature was consulted through the OpenGray database of the Brazilian Digital Library of Thesis and Dissertations and Capes' Catalog of Thesis and Dissertations. The database search was carried out on December 14, 2020, without using date or language filters, and results were sent to the Mendeley® reference manager in a group common to the three researchers. After removing documents doubled by Mendeley®, all articles were sent via Excel® in a single table, so the analysis by title and summary could be started.

We used the following parameters for the inclusion of primary articles addressing the use of prognosis scores in the allocation of resources in ICUs:

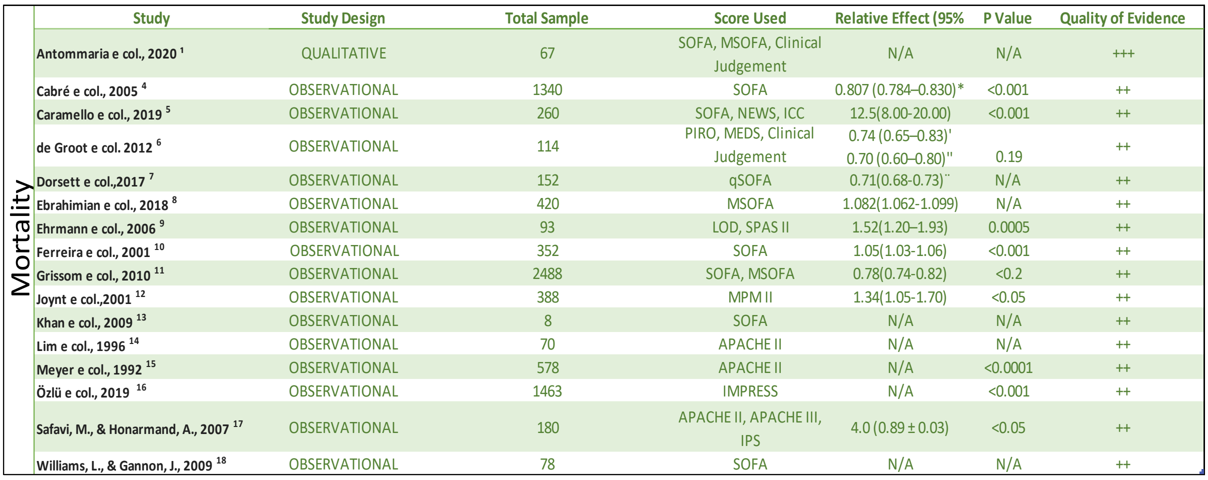
- If the study strived to assess a prognosis score as triage for resource allocation.
- If the outcome pertained to death and/or hospital dismissal (transfers were also considered).
- If the articles also addressed the following prognosis scores to predict mortality: SOFA, MSOFA, APACHE, LOD, SAPS, MPM, MODS, Charlson Comorbidity Index (CCI) and any others that could be used as criteria for the allocation of resources as ICU hospitalization and availability of mechanical ventilators.
- If the sample included adults regardless of gender.

A Google form was drafted according to these criteria to assure standardization and agility in organizing the titles selected by the two reviewers (RLS, LB).

The excluded articles include publications that presented only a literature review, opinion pieces, assistance protocols, rapid systematic reviews and/or systematic reviews, rapid reports and/or research with incomplete data and with whose authors' contact was not possible. To avoid excluding important articles, they were fully read whenever their titles or summaries did not fully clarify their topics.

As regards data extraction, the data collected from this study include authors, study design, country, sample totals, tools (scoring systems used), criteria for inclusion into and exclusion from the study, duration of the research in months, outcomes, and division per gender, average participant age, ethical approach, and informed consent. All aspects, as mentioned earlier, were duly organized in a standardized Excel® file for better viewing and comparison of results.

We used the GRADE framework (see Chart 1) to evaluate the level of scientific evidence of the sixteen studies included in the synthesis. In their entirety, all articles are observational studies, and for this reason, the evaluation begins with poor quality. Despite the level of evidence being considered low, according to the GRADE standards, many of these studies assess the sensibility and specificity [4,6-7,11,15] of scores to obtain a better correlation between the use of the scoring system and the evaluation of mortality rates to guide resource allocation or triage processes. The fact is that many guidelines use these studies to make recommendations concerning professional practice and to guide allocation in times of a pandemic.



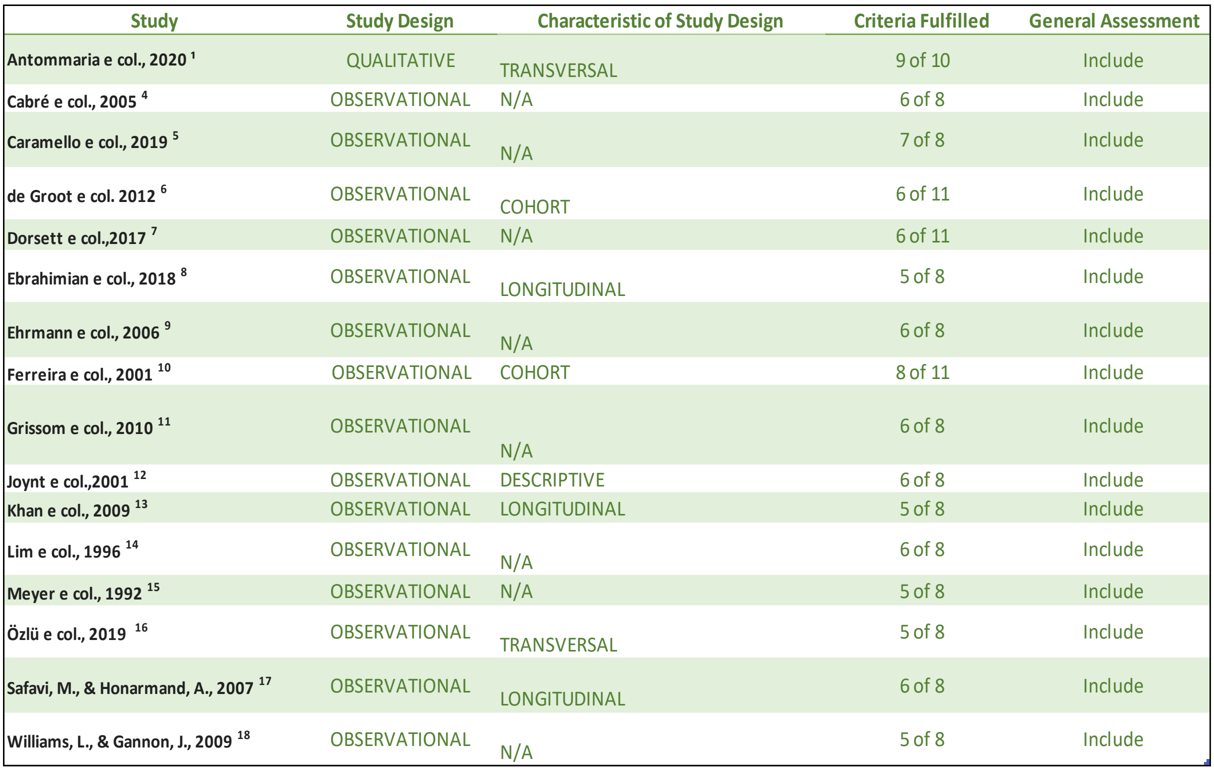
	Study	Study Design	Total Sample	Score Used	Relative Effect (95%	P Value	Quality of Evidence
Mortality	**Antommaria e col., 2020 [1]**	QUALITATIVE	67	SOFA, MSOFA, Clinical Judgement	N/A	N/A	+++
	Cabré e col., 2005 [4]	OBSERVATIONAL	1340	SOFA	0.807 (0.784–0.830)*	<0.001	++
	Caramello e col., 2019 [5]	OBSERVATIONAL	260	SOFA, NEWS, ICC	12.5(8.00-20.00)	<0.001	++
	de Groot e col. 2012 [6]	OBSERVATIONAL	114	PIRO, MEDS, Clinical Judgement	0.74 (0.65–0.83)' 0.70 (0.60–0.80)''	0.19	++
	Dorsett e col.,2017 [7]	OBSERVATIONAL	152	qSOFA	0.71(0.68-0.73)¨	N/A	++
	Ebrahimian e col., 2018 [8]	OBSERVATIONAL	420	MSOFA	1.082(1.062-1.099)	N/A	++
	Ehrmann e col., 2006 [9]	OBSERVATIONAL	93	LOD, SPAS II	1.52(1.20–1.93)	0.0005	++
	Ferreira e col., 2001 [10]	OBSERVATIONAL	352	SOFA	1.05(1.03-1.06)	<0.001	++
	Grissom e col., 2010 [11]	OBSERVATIONAL	2488	SOFA, MSOFA	0.78(0.74-0.82)	<0.2	++
	Joynt e col.,2001 [12]	OBSERVATIONAL	388	MPM II	1.34(1.05-1.70)	<0.05	++
	Khan e col., 2009 [13]	OBSERVATIONAL	8	SOFA	N/A	N/A	++
	Lim e col., 1996 [14]	OBSERVATIONAL	70	APACHE II	N/A	N/A	++
	Meyer e col., 1992 [15]	OBSERVATIONAL	578	APACHE II	N/A	<0.0001	++
	Özlü e col., 2019 [16]	OBSERVATIONAL	1463	IMPRESS	N/A	<0.001	++
	Safavi, M., & Honarmand, A., 2007 [17]	OBSERVATIONAL	180	APACHE II, APACHE III, IPS	4.0 (0.89 ± 0.03)	<0.05	++
	Williams, L., & Gannon, J., 2009 [18]	OBSERVATIONAL	78	SOFA	N/A	N/A	++

*‘PIRO; “MEDS; “’ Clinical Judgement. *Model 1; **Model 2; ***Model 3. ¨Pre-hospital; Hospitalization outside the ICU. We always consider the higher values of the relative effect pertaining to mortality and the prognosis score. N/A (not applicable) was used for the articles that did not calculate the relative effect or the P-value related to mortality.*

Chart 1: Quality of articles included according to the GRADE criteria

Regarding the risk of bias, we used the checklist available in *The Joanna Briggs Institute Critical Appraisal tools for use in JBI Systematic Reviews* according to the characteristics of each study design

[19]. The items that follow were part of the evaluation and included issues such as consistency between scope and the methodology described in the article; consistency between the methodology and the research's questions/objectives; consistency between methodology and data collection; consistency between methodology and data analysis; consistency between methodology and interpretation of results; explanation of financing and/or conflicts of interest; the existence of ethical approval, etc. For each item, the options "yes", "no" and "not applicable" were allowed and then reverted this in a general evaluation as "obtain more information," "include in the article," or "exclude an article from the review."
The methodological quality of each study is related to the lower or higher risk of bias and is an essential part of the evaluation of evidence quality. No studies were excluded from this phase. Details of the risk of bias evaluation of each study can be found in Chart 2.
Similarly, we have summarized the statistical data with Microsoft Excel® using calculations of the mean and average based on the results of the studies. A synthesis without meta-analysis was employed when it was not impossible to evaluate the association amongst the variables and prevalence of data presented. The literature already shows that it is not possible for meta-analysis to be used when the data being analyzed is not presented based on descriptive techniques, as mentioned below.



Study	Study Design	Characteristic of Study Design	Criteria Fulfilled	General Assessment
Antommaria e col., 2020 [1]	QUALITATIVE	TRANSVERSAL	9 of 10	Include
Cabré e col., 2005 [4]	OBSERVATIONAL	N/A	6 of 8	Include
Caramello e col., 2019 [5]	OBSERVATIONAL	N/A	7 of 8	Include
de Groot e col. 2012 [6]	OBSERVATIONAL	COHORT	6 of 11	Include
Dorsett e col.,2017 [7]	OBSERVATIONAL	N/A	6 of 11	Include
Ebrahimian e col., 2018 [8]	OBSERVATIONAL	LONGITUDINAL	5 of 8	Include
Ehrmann e col., 2006 [9]	OBSERVATIONAL	N/A	6 of 8	Include
Ferreira e col., 2001 [10]	OBSERVATIONAL	COHORT	8 of 11	Include
Grissom e col., 2010 [11]	OBSERVATIONAL	N/A	6 of 8	Include
Joynt e col.,2001 [12]	OBSERVATIONAL	DESCRIPTIVE	6 of 8	Include
Khan e col., 2009 [13]	OBSERVATIONAL	LONGITUDINAL	5 of 8	Include
Lim e col., 1996 [14]	OBSERVATIONAL	N/A	6 of 8	Include
Meyer e col., 1992 [15]	OBSERVATIONAL	N/A	5 of 8	Include
Özlü e col., 2019 [16]	OBSERVATIONAL	TRANSVERSAL	5 of 8	Include
Safavi, M., & Honarmand, A., 2007 [17]	OBSERVATIONAL	LONGITUDINAL	6 of 8	Include
Williams, L., & Gannon, J., 2009 [18]	OBSERVATIONAL	N/A	5 of 8	Include

Chart 2: Risk of bias assessment of each selected study. N/A (not applicable) corresponds to the non-detailing of study design beyond Observational, Qualitative, and prospective/retrospective.

Significant limitations of our review should be noted. Some studies may have been lost during the final phase of the research's selection or due to the rapid evolution of literature about COVID-19 (even though very little fulfills our criteria for inclusion). Note that only one [1] of the studies included in this systematic review was published in the context of the COVID-19 pandemic. Nonetheless, all the included studies are used to design protocols/guidelines, given that they are primary research based on empirical evidence. Finally, another limitation that must also be considered is that this review is focused on a scenario of critical care for adults and does not include pediatrics, palliative care, or pregnant patients.

However, despite such limitations and given the uncertainties of the evolution of this and future pandemics, health care services and health care professionals need to decide on some triage protocol with which to prioritize patients in allocating scarce resources – whether it is or is not during a pandemic – that assures a fair and equalitarian approach that is technically and ethically solid. This reason in itself justifies this systematic review's construction and objective. In this review, we consider as triage the same principle pointed out by Joynt et al. [12] where it is stated that *"triage is the process of classifying patients according to the order of priority, so refused patients have the least minimum chance of benefitting from ICU care"* (p.1463).

Outcomes and Discussion

The search for data identified 3022 single citations. After evaluating the titles and summaries for eligibility, 49 studies were included to be thoroughly reviewed. The most common reason for exclusion was that articles did not present the outcome of the research (48.5%) or brief reports or documents that had incomplete data (39.4%). Such data is specified in Figure 1.

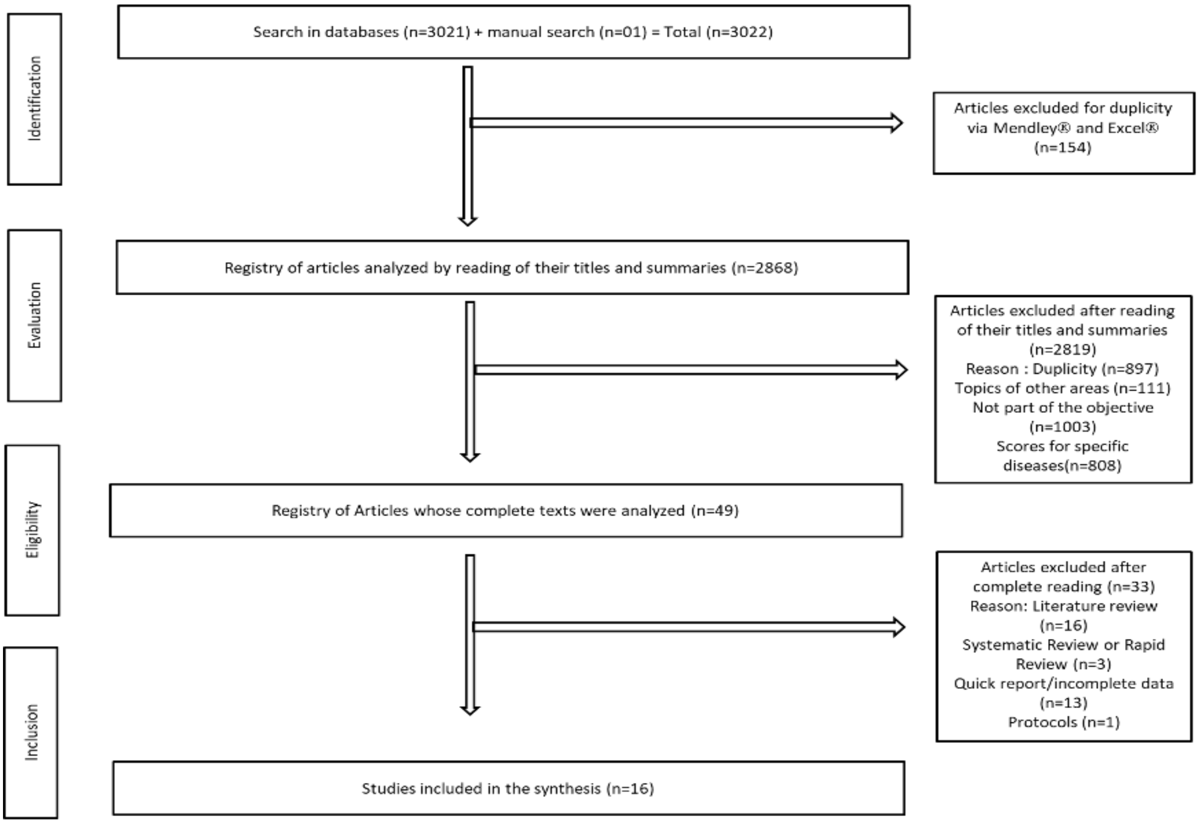


Figure 1 - Prism Flow Chart of Study Selection

The present study gathered 16 articles of various methodological designs, and a descriptive analysis of the work carried out follows. This total number of studies (n=16) includes publications from 1990 to 2020, which shows the importance of the topic, which has been discussed for over three decades. As we can observe in Table 1, the studies are concentrated in countries in the Global North, and only one study was conducted in a Latin American country [4]. This multi-centric study based in Europe included a Latin American center but did not further specify which countries were included. The countries of the Global North where studies were most often carried out were the United States, United Kingdom, Italy, Germany, France, and Belgium. In other words, almost all of the studies came from countries that are already in the heart of scientific production and, to some extent, state the rules to the countries of the Global South without considering their characteristics.

The studies were conducted with research participants with their singularities and health care needs and included only patients with better access to health care. It is essential to consider that racial, ethnic, social-territorial, and economic inequality are widely present in many countries, commonly as a result of colonization, and this places some social groups at a disadvantage when accessing health care. Thus, this frequently makes it difficult for the outcomes of these studies to be applied to other nations. All of this leads to decisions that need to establish limits, which invariably involve the moral values of the society being contemplated by such decisions and other factors as culture, politics, and economics [20]. Each society should have the possibility of deciding which aspects would better ground their choices regarding resource allocation. The incidence of countries where the studies were carried out is stated in Table 1.

Study	Country	Female	Male	Total Sample
Antommaria e col., 2020 [1]	USA	N/A	N/A	67
Cabré e col., 2005 [4]	Spain, Latin America	N/A	N/A	1340
Caramello e col., 2019 [5]	Italy	149	111	260
de Groot e col. 2012 [6]	Holland	N/A	N/A	114
Dorsett e col.,2017 [7]	USA	N/A	N/A	152
Ebrahimian e col., 2018 [8]	Iran	186	234	420
Ehrmann e col., 2006 [9]	France	N/A	N/A	93
Ferreira e col., 2001 [10]	Belgium	122	230	352
Grissom e col., 2010 [11]	USA	1088	1400	2488
Joynt e col.,2001 [12]	Hong Kong	167	221	388
Khan e col., 2009 [13]	United Kingdom	6	2	8
Lim e col., 1996 [14]	Not clear	25	45	70
Meyer e col., 1992 [15]	USA	243	335	578
Özlü e col., 2019 [16]	Turkey	625	838	1463
Safavi, M., & Honarmand, A., 2007 [17]	Dubai	77	103	180
Williams, L., & Gannon, J., 2009 [18]	United Kingdom	N/A	N/A	78
Total		269	352	503

Table 1: Demonstration of countries, divided by gender and sample total. The option N/A (not applicable) was used when the study presented only the total sample that was not divided according to gender.

A large part of the studies had an observational and a prospective design (n=13). Only three papers [7,11,13] used a retrospective vision analyzing the facts after they happened to understand how the use of scores could be beneficial in that process. One study [1] used a qualitative prospective design to carry out its investigation. Our search was not successful in identifying any randomized study (whether or not it was double-blind) that addressed the topic, and this can suggest possible ethical objections to studies with this characteristic. However, they represent that which is considered to be more robust evidence in the medical community.

As for the duration, the selected articles were very heterogeneous and lasted on average 6.5 months (Graphic 1). Although all articles presented discussed the use of prognosis scores for the allocation of resources during sanitary emergencies, only one study (6%) [1] directly addressed the ethical question when it asked participants about the policies for resource allocation at each institution where they were inserted.

Regarding the total sample of all studies evaluated, we calculated a simple average to group them.

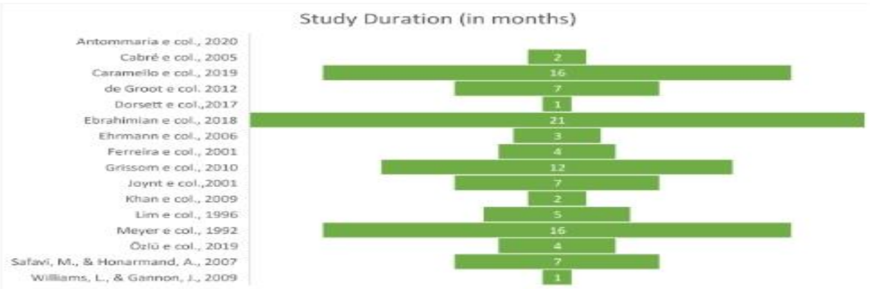
The total average of participants was 503 persons, the average of women was 269, and the average of men was 352. Thus, we can notice that most of the population of critical patients was of persons of the male sex. Such data can support Gomes, Nascimento and Araújo [21] and with Lim et al. [14] when they affirm that persons of the male sex seek less health service assistance or only seek health service assistance when they are very sick and, for this reason, suffer from more severe or chronic health issues than persons of the feminine sex.

Age, diagnosis, prognosis, and severity of the disease are essential aspects assessed in making health care decisions, especially regarding scarce resources [12]. So, to assess the average age provided by all selected studies, we pondered all ages with the total sample of each selected study. We endorse the idea that young adults are part of the population of an ICU and that the average age is 56.

Of our total sample (n=16), 15 articles discuss allocation criteria based on prognosis scores and mention the ethical aspects solely to justify the absence of informed consent or justify that the study was duly assessed and approved by an ethics committee. The articles do not address the possibility of influence by external factors on the scores or clinical judgements or the injustice of access or allocation as a result of discriminatory processes these scores can ensue (Chart 3). The article that has a qualitative [1] methodological design was the only one that addressed an ethical and bioethical background on the allocation of resources.

Study	Term of Consent	Equity	Utilitarianism	Obligation to Provide Care	Beneficience	Justice	Transparence	Resource Optimization
Antommaria e col., 2020 [1]	Dismissed		X	X	X	X	X	X
Cabré e col., 2005 [4]	Dismissed		X		X			X
Caramello e col., 2019 [5]	YES	X	X					X
de Groot e col. 2012 [6]	N/I							X
Dorsett e col.,2017 [7]	YES		X					X
Ebrahimian e col., 2018 [8]	YES		X		X		X	X
Ehrmann e col., 2006 [9]	YES		X					X
Ferreira e col., 2001 [10]	Dismissed		X					X
Grissom e col., 2010 [11]	Dismissed		X					X
Joynt e col.,2001 [12]	YES							X
Khan e col., 2009 [13]	YES		X					X
Lim e col., 1996 [14]	N/I		X					X
Meyer e col., 1992 [15]	N/I		X					X
Özlü e col., 2019 [16]	YES		X					X
Safavi, M., & Honarmand, A., 2007 [17]	N/I		X					X
Williams, L., & Gannon, J., 2009 [18]	N/I		X					X

Chart 3: Comparative chart of ethical values addressed as background for the selected studies. Values N/I (not informed) identified on the chart correspond to the studies that did not cite the use or dismissal of a term of consent.



Graph 1: Shows the studies' duration times (in months). Value "0" refers to the studies that lasted under one month. Empty bars mean that the study did not mention the year it was carried out.

The ICU occupancy rates, as well as the increased capacity at these units, are one of the serious [8] problems that need to be faced during sanitary emergencies as the COVID-19. The fact is that when we consider society's health care needs, which are greater than the available resources, the health care systems are required to rationalize the scarce resources for critical care with greater emphasis at times of pandemics. At such times, the parties responsible for the health care systems and their professionals have the moral obligation to the allocation of resources and to not exempt themselves from this type of choice. The persons responsible for public policies should formulate fair and transparent proposals, whereas professionals should decide which needs can and should be rationalized. The past H1N1 and MERS pandemics have shown that such measures need to be taken so that minimum satisfactory assistance can be possible during crises [13,20]. The ethical challenges that we face during this pandemic are generally centered on the topic most addressed by the selected studies and include the allocation of resources: equal distribution of scarce resources. However, these challenges also involve the definition of benefits to the patients, ponderation on the needs of most affected groups, involvement of society in the decision-making protocols, reduction of the impact of discrimination and inequalities that are structurally present in the society we live in, respect to the values of our general population and, especially, of patients and their families.

In practice, the rationing of health care is started when policies or political budgetary planning strategies for the social sector are elaborated and implemented by governing bodies and their allies. The lack of effectiveness and efficiency in employing insufficient resources for health care to meet the populations' needs is an ethical mistake as it reduces the reach of policies to those individuals that most need and depend on them as a result of their vulnerable situation.

It is notorious that underlying each technical decision is a moral choice that may or may not be considered in the decision-making process. Not considering such moral choice does not mean being neutral, but instead it means making an effective moral decision. Technical information serves to guide the decision as it can help us better understand the possible outcomes of the situation and can, therefore, help better ponder the values and principles involved.

In the analyzed articles, we can notice those whose backgrounds included an idea of justice based on a utilitarian perspective and that always addressed and justified the use of scores to optimize resources as spent vs. expected outcome. However, these studies never mentioned ethical values [4-7,9-18]. In sum, and despite the broad concept, utilitarianism defends that we should provide "more well-being to the highest possible number of people. (22)" Thus, when two conflicting situations are present, for example, two or more patients who need one only available resource, we would weigh each situation or chose that which ensued the greatest benefit or minimized pain or suffering to the highest number of persons involved, even if not all of these people had the same chances of being saved and this is also reflected in articles that highlight differentiated values.

In Ebrahimian et al. [8], the authors highlight other values, thus demonstrating that the resource allocation process should also be grounded on fundamental principles as transparency in the choice of criteria to the society that will be affected by such allocation in addition to beneficence. Based on these other values, the professional would have the moral obligation to act to the benefit and best interest of the individual affected, whereas utilitarianism would also be understood as a product of resource optimization using criteria such as cost and benefit [23]. The evaluation systems are projected to produce the main criteria for the decision to allocate resources to patients that will most "gain." However, such systems cannot contribute to the triage process when two patients in equal clinical status need the same intervention in a context of significant scarcity, as we witnessed during the new coronavirus pandemic [24].

The prognosis scores used by the selected studies include that which is most cited in the guidelines, and that is justified for such broad use and high recommendation – the facility to measure the items used as there are relatively few variables. These scoring systems are SOFA (Sequential Organ Failure Assessment Score), MSOFA (Modified SOFA), and qSOFA (Quick Sofa) [4,25]. Other scoring systems used in the selected studies include: APACHE II and III (Acute Physiological Assessment and Chronic Health Evaluation), SPAS II (Simplified Acute Physiology Score), ΔLOD (Logistic Organ Dysfunction Score), MPM II (Mortality Prediction Model Score), IPS (International Prognostic Score), PIRO (Predisposition Insult Response Organ Failure), CCI

(Charlson Comorbidity Index), MEDS (Mortality in Emergency Department Sepsis), IMPRES (IMV Mortality Prediction Score) and Clinical Judgement as possibilities for resource allocation. However, it is necessary for other individual factors as, for example, the layers of vulnerability, to be critically assessed before these scores are recommended as important criteria in resource allocation to assure that these recommendations do not become discriminatory in professional practice.

Although these prognosis scoring systems aim to aggregate data that promotes, they are not ethically neutral or free of prejudice and discrimination. An example of this is the use of comorbidities as a factor for excluding a given patient during a decision for resource allocation. Such a choice fosters inequalities that begin at the time of access to health care. Thus, populations that have historically been discriminated against would have fewer possibilities of being selected during triage of COVID-19 patients requiring ICUs. This inequity in the distribution of resources would occur, for example, due to their comorbidities and the result of the many layers of vulnerability faced.

Although these scoring systems were developed to prevent mortality individually, some authors [11,26] demonstrate concern toward them being used as a tool for triage given that a large number of patients that attained a cut-off point with more significant mortality indexes through SOFA and MSOFA (>11=>90% mortality) survived.

An ethical challenge related to morbidity, as assessment criteria used in the scores for resource allocation, refers to the challenges facing the COVID-19 pandemic, especially in the Brazilian context. It is important to highlight that the structural inequality in our country, between social and racial groups, imposes greater vulnerability of some populations to avoidable and chronic diseases that lead to shorter life expectancies, especially for the black population.

A study carried out in Rio de Janeiro [27] shows that depending on a person's neighborhood, the life expectancy drops from 70 to 48 years. There may be a 10-year difference in life expectancy in the same neighborhood when comparing groups of white persons to groups of black and mixed-race persons. Another study [28] points that in the city of São Paulo, between March and July of 2020, the mortality rate of black men from COVID-19 was 250 deaths per 100 thousand persons, whereas the mortality of white men was 157. In this sense, an evaluation of the allocation of scarce resources that uncritically consider comorbidities will further strengthen the historical injustices in healthcare access. It is also important to consider that during the COVID-19 pandemic, the distribution of other resources as, for example, housing, income, and food became even more challenging and contributed to these populations becoming sick [29,31]. A large part of decision-makers in clinical practice and researchers who foster these discussions are white, male medical doctors who are socially and economically privileged [31]. This implies making decisions that can reflect the biases of their moral construction and can validate the inequity in health as it affects both the patients' assessment during triage as well as resource allocation.

The idea that as health professionals, we should save the most people possible is so naturally comprehensible and propagated that most of the analyzed studies place utilitarianism as a fundamental principle for the choice. Nonetheless, such a measure can become unfair when it exposes other persons of the same society to the possibility of not being cared for. As we can observe from the data presented, there is strong evidence for using scoring systems, but this data is not sufficient to ensure that the choices made are effectively fair for everyone and not just for most people. A study conducted by Antommaria et al. [1] mapped out the values and moral principles that ground the formulation of institutional policies for resource allocation in all of the USA. The most widely addressed ethical values that support the formulation of these policies to prioritize patients include justice, transparency, management, the obligation to provide care, and the obligation to prevent the unnecessary loss of lives. Some interviewees omitted the aspects involved in what they considered a fair implementation of a triage policy. The criteria declared, as regards triage, included: benefits, needs, age, conservation of resources, and lottery. By specifying need and benefit, the interviewees listed the use of a points system as an important item for triage, and the SOFA and MSOFA scoring systems were the most mentioned. Fifty percent of the policies analyzed during this study included age as a criterion for triage, but only 7.7% of them specified the limits for the use of such criterion. This sets a precedent for age discrimination, which can determine both social and health care policies and practices that discriminate and segregate persons in old age and hinder the health of the most elder [32].

Final Remarks

It is important to recall that our research was carried out by analyzing primary data that support the guidelines for the allocation of scarce resources. It is a fact that in light of a sanitary emergency, the Brazilian Unified Health System (*Sistema Único de Saúde – SUS*) is not capable of solving the structural inequalities embedded in our country. However, this system should also not contribute to the gaps of inequality becoming increasingly wider. It is known that triage decisions take place every day in clinical practice and are frequently not in tune with the many guidelines that are established and divulged, and so the final decisions made are in fact left to the medical teams that carry with them their own ethical and moral precepts for such processes. These health care professionals should create mechanisms to keep these biases from favoring discrimination in the triage processes. These biases may not be deliberate, but they perpetuate privileges and structural discrimination. Brazilian society is profoundly scarred by colonialism – be it by patriarchy and structural racism or by the economic inequalities that sustain and reproduce long-standing colonial hierarchy. The development of minimum agreements on which parameters can be adopted in a triage process to prioritize patients during pandemic matters. These agreements have the potential to create solid ethical grounds for the adoption of criteria that focus on fair and effective choices for all, including for those who socially face greater layers of vulnerability. Participation by the population is critical given that triage for the allocation of scarce resources shall reflect the values of the populations it will affect. A triage and selection to decide which patient will benefit from a scarce resource under the scrutiny of utilitarianism criteria that will supposedly provide the greater good for the higher number of persons will undoubtedly exclude part of the population. It is this type of decision that could further widen the gap of inequality, as well as reproduce social injustices that are so enrooted in our society. SUS was created under equity premises, and we need to build effective alternatives that sustain these premises in different situations. We believe that emergencies like the COVID-19 pandemic must be used as opportunities to reflect on the ethical values for the construction of protocols, so resources are allocated more fairly and equally.

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