QUALITY OF LIFE OF CONFIRMED COVID-19 CASES: OBSERVATIONAL STUDY

QUALIDADE DE VIDA DOS CASOS CONFIRMADOS DE COVID-19: ESTUDO OBSERVACIONAL

CALIDAD DE VIDA DE CASOS CONFIRMADOS DE COVID-19: ESTUDIO OBSERVACIONAL

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ABSTRACT
Objective: To describe the Quality-of-Life indicators and the sociodemographic and clinical profile of cases contaminated by Covid-19 in a city in southern Minas Gerais. **Method:** quantitative study with cross-sectional design, data collection was by interview using the WHOQOl-Bref instrument from January to June 2021. **Results:** Of the 428 confirmed cases of Covid-19 allocated for the interviews, 211 were lost for different reasons, resulting in the final sample of 217 participants. As for the age range, the majority was female (55.8%) from 60 to 69 years old, marital status with a partner, elementary school education and with an income of approximately 1 minimum wage; the most affected domains were the physical (mean 70.8) and environment (74.2). **Conclusion:** This research indicated that the Covid-19 in the population studied led to several complications compromising quality of life, being indicators of extreme importance to plan assistance and direct public health policies. The results also indicate the need for rehabilitation and health promotion programs to minimize the complications caused by Covid-19.
Keywords: Covid-19; Quality of Life; Pandemic; Coronavirus; Nursing.

RESUMO
Objetivo: Descrever os indicadores de Qualidade de vida e o perfil sociodemográfico e clínico dos casos contaminados pela Covid-19 numa cidade do sul de Minas Gerais. Método: estudo quantitativo com delineamento transversal, a coleta de dados foi por entrevista utilizando o instrumento WHOQOl-Bref, no período de janeiro a junho de 2021. Resultados: Dos 428 casos confirmados de Covid-19 alocados para as entrevistas, 211 foram perdidos por diferentes motivos, resultando na amostra final de 217 participantes. À faixa etária, a maioria foi do sexo feminino (55,8%) de 60 a 69 anos, estado marital com companheiro, escolaridade de nível fundamental e com renda de aproximadamente 1 salário mínimo; os domínios mais afetados foram o físico (média 70,8) e meio ambiente (74,2). Conclusão: Esta pesquisa evidenciou que a Covid-19 na população estudada acarretou várias complicações comprometendo a qualidade de vida, sendo indicadores de extrema importância para planejar a assistência e direcionar políticas públicas de saúde. Os resultados também indicam a necessidade de programas de reabilitação e promoção de saúde para minimizar as complicações causadas pela COVID19.
Palavras-chave: Covid-19; Qualidade de Vida; Pandemia; Coronavírus; Enfermagem.

RESUMEN
Objetivo: Describir los indicadores de Calidad de Vida y el perfil sociodemográfico y clínico de casos contaminados por Covid-19 en una ciudad del sur de Minas Gerais. Método: estudio cuantitativo con diseño transversal, la recolección de datos fue a través de entrevistas utilizando el instrumento WHOQOl-Bref, de enero a junio de 2021. Resultados: De los 428 casos confirmados de Covid-19 asignados a las entrevistas, 211 se perdieron por diferentes razones, dando como resultado una muestra final de 217 participantes. En cuanto a la edad, la mayoría eran del sexo femenino (55,8%) con edad entre 60 y 69 años, estado civil con pareja, escolaridad básica e ingresos de aproximadamente 1 salário mínimo; los dominios más afectados fueron físico (media 70,8) y medio ambiente (74,2). Conclusión: Esta investigación mostró que el Covid-19 en la población estudiada provocó diversas complicaciones, comprometiendo la calidad de vida, siendo indicadores de suma importancia para la planificación de la asistencia y la dirección de las políticas públicas de salud. Los resultados también indican la necesidad de programas de rehabilitación y promoción de la salud para minimizar las complicaciones provocadas por el COVID19.
Palabras clave: Covid-19; Calidad de Vida; Pandemia; Coronavirus; Enfermería.

INTRODUCTION

The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov2) pandemic, known as COVID-19 declared by the World Health Organization on March 11, 2020, spread rapidly around the world causing significant changes in the living habits of populations. Protective measures such as wearing masks, physical and social distancing were necessary [1,2].

In addition, it brought great challenges to public health systems with increasing demands for hospitalization, intensive care, and outpatient care overloading the system and increasing health care spending [3].

The first case in Latin America was registered in Brazil on February 25, 2020, by the Ministry of Health of Brazil, since then, the numbers have been growing reaching in April 2022 662,722 deaths and 30,355,919 confirmed cases. In the southeast region there were 11,895,797 cases and 316,860 deaths, and in the state of Minas Gerais 358971 confirmed cases with 61093 deaths [4.5].

In the city of Alfenas, from 03/17/2021 to 04/14/2022 there were, 20783 confirmed cases and 246 deaths; since 03/20/2022 there have been no deaths and the number of confirmed cases has remained stable at around 100 cases a day. In Brazil, the vaccination coverage has reached 75%, which explains the sharp decline in the number of cases and deaths in Brazil. This scenario made the Ministry of Health, on April 17, 2022, announce that the COVID-19 is no longer a Public Health Emergency of National

Importance (ESPIN- in Portuguese). However, the WHO reinforced on April 13, 2022, that the new coronavirus is still a Public Health Emergency of International Importance and requires care [6,7].

In this pandemic context that were adopted non-pharmacological control measures of transmissibility as the physical and social distancing, leading people to be confined to their homes, far from family and friends, caused or even exacerbated negative feelings such as fear, sadness, discouragement, stress, anxiety, insomnia, among others, also resulting from the loss of loved ones, lack of respirators and vacancies in ICU, risk of job losses and reduced wages, in addition to the consequences of infection by COVID-19, which significantly affected the quality of life of the population [8,9].

The evaluation of quality of life has been a topic of interest in social progress and in the transformation of health care systems since it assesses the impact of the disease and treatment on the patients' function and general life satisfaction [10]. The COVID-19 is a new disease with little known repercussions, so knowing how the Quality of Life of the population contaminated by this disease is important to direct the assistance and rehabilitation programs. Several studies have indicated that COVID-19 can affect the Quality of life of patients and general populations [11,12].

Thus, it is necessary to investigate how COVID-19 affected the Quality of life of a population in southern Minas Gerais to support

health professionals in planning care and to direct Public Policies.

METHODS

Study design

The present study, of quantitative cross-sectional design, is a subproject of a cohort study entitled "Study of confirmed cases of COVID-19 in Minas Gerais". For the report of the research, we followed the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE).

Study population

The study population was composed of residents in the municipality of Alfenas, diagnosed with Covid-19 in the period from March 15 to October 26, 2020, identified from the compulsory notification registry of the Secretary of Health of the State of Minas Gerais. With this, the reference population for the study was constituted by the first 1,923 confirmed cases of SARS-CoV-2 in Alfenas-MG.

The following inclusion criteria were considered: adults and elderly (age 20 years or older), residents of Alfenas-MG, confirmed cases of COVID-19 through laboratory tests, who did not reside in an institution and who did not progress to death. Among those eligible, there were 1,459 cases that had not been hospitalized and 107 people with a history of hospitalization, totaling 1,566 people who met the inclusion criteria. Thus, from the initial list obtained, 110 elderly residents of a local nursing home institution, 189 people under 20 years of age, 21 people with no recorded age, 35 cases of

death, and two duplicate records were disregarded, totaling 357 exclusions. The sample was interviewed up to 1 year after the diagnosis of COVID-19, in the period from January to June 2021.

Composition of the study sample

For sample calculation and drawing of study participants, stratified and proportional random sampling was considered, taking as strata the age range and occurrence of hospitalization. The sample was calculated considering all 107 patients hospitalized in Alfenas-MG until the above-mentioned period and adding, in the proportion of 2.5:1, cases from the community. A 20% loss due to refusal or other causes was considered. Thus, a sample size of 428 participants was estimated to be necessary. The estimated number gave the sample a power $(1-\beta)$ equivalent to 88%.

Preparation for fieldwork

Materials, equipment, and supplies were purchased for the field work. The undergraduate and graduate students, who acted as interviewers, were trained regarding the home visit, personal protective equipment and biosafety, data collection, database preparation in October and November 2020. The training involved 27 people between teachers and students, and the material was recorded and made available on Google Drive as support material for all interviewers throughout the period of execution of the study.

Data Collection Instrument

Data collection was performed with tablets and cell phones, using the KOBOTOOLBOX application, a free and open software, which presents as benefits the optimization of the collection, reduction of paper costs, physical resources, and especially reduction of errors during data entry because these are stored in the cloud and made available to the user in spreadsheet format in Excel for Windows, for later compatibility of this database with analysis programs [13].

To collect sociodemographic and clinical data, the following variables were collected: gender, age, marital status, per-person income and education.

To assess the quality of life, we considered the WHO concept of quality of life (QL), which defines it as "an individual's perception of his position in life in the context of the culture and value systems in which he lives and in relation to his goals, expectations, standards, and concerns". The WHOQOL-bref instrument was used, consisting of 26 questions divided into the physical, psychological, social relations and environment domains.

Pilot Phase and Pre-Test

The pre-pilot study and pre-test before the field work for data collection took place from November 24 to December 15, 2020, with the objective of familiarizing the interviewer with the instruments and the KOBOTOOLBOX tool, an important moment for proposing adjustments.

In the pre-test, the goal was to conduct home visits to part of the sampled people to experience the interview situations in the field, train the application of the electronic questionnaire with the tablets, recognize part of the territory and the municipal transportation system. This procedure aimed to reduce bias in data collection.

Study Variables

Sociodemographic characterization:

Gender - participants of both genders were considered.

Age - calculated from the subtraction between the date of the interview and the date of birth/365.25. Subsequently, this variable was classified into age ranges of 10 years, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, and 80 years and older.

Marital status - participants were classified as without partner and with partner.

Per-person income - calculated from the information of monthly income divided by the number of people who depended on this income. Subsequently, this variable was classified into three categories, using as cutoff points the thirds of the distribution.

Education - calculated from the number of completed years of formal education reported by the interviewed skin.

Number of complications - number and types of complications reported by the participants.

WHOQOL- BREF instrument (Quality of Life - QL):

The WHOQOL-bref abbreviated version instrument was used for data collection. The validation in Brazil was performed [14], and the Portuguese version of the instrument presented satisfactory characteristics of internal consistency, discriminant validity, criterion validity, concurrent validity, and test-retest reliability. It is an instrument created by the Quality-of-Life Group of the World Health Organization to assess the QL of individuals. In its composition it has 24 specific facets with 4 domains which are: Physical, Psychological, Social Relationships and Environment and a general facet that includes two global qualities of life assessment questions, totaling 26 items. All questions are answered on a five-point Likert-type scale, resulting in an overall score and scores in each domain, on this scale the score ranges from 1 to 5, the higher the score the better the QL [3].

The recoding of the answer values is necessary for the analysis of the instrument in the items: (3); (4); (26) according to (1=5); (2=4); (3=3); (4=2); (5=1). For each facet, the sum of the values of the participants' answers is made varying (from 1 to 5) and divided by the number of research participants following the Likert scale.

The physical domain is composed of questions that have the objective of evaluating the state of the individual in the following items: 3. Pain and discomfort; 4. Energy and fatigue; 10. Sleep and rest; 15. Mobility; 16. Activities of daily living; 17. Dependence on medication or treatments; 18. Capacity for work. The calculation of the physical domain is the sum of the response values and divide by 7 (q3, q4, q10, q15, q16, q17, q18)/7.

The psychological domain seeks to evaluate the individual's state within the psychological context with the items: 5. Positive feelings; 6. Thinking, learning, memory, and concentration; 7. Self-esteem; 11. Body image and appearance; 19. Negative feelings; 26. Spirituality/religion/personal beliefs. The calculation of the psychological domain is the sum of the values of the responses and divided by 6(q5, q6, q7, q11, q19, q26)/6.

The social relations domain evaluates the context in which the individual is socially inserted, with the items: 20. Personal relations; 21. Social support; 22. Sexual activity. The calculation of the social relations domain is the sum of the values of the answers and divide by 3 (q20, q21, q22)/3. The environment domain evaluates the individual in the context that is inserted in the environment with the items: 8. Physical safety and protection; 9. Environment at home; 12. Financial resources; 13. Health and social care: availability and quality; 14. Opportunities to acquire new information and skills; 23. Participation in, and opportunities for recreation/leisure; 24. Physical environment: (pollution/noise/traffic/climate) 25. Transportation. The calculation of the environment domain is the sum of the response values divided by 8 (q8, q9, q12, q13, q14, q23, q24, q25)/8.

The results are distributed in each domain through the average. The distribution of the domains presented by averages are followed according to need's improvement (when 1 to 2.9); fair (3 to 3.9); good (4 to 4.9) and very good (5). - Portuguese version [14,15].

Data processing

The information collected during the face-to-face interviews was automatically transferred via electronic questionnaire to the KoBoToolbox platform, where it was stored. Subsequently, the data was exported to a spreadsheet in Excel format and then transferred to Stata software, version 13.1. At each batch of 50/100 records, the database was subjected to internal consistency tests (evaluation of the quality of information and missing data pattern). Once this phase was concluded, the final stage of data management was reserved for the definitive categorization of the original variables and generation of new variables.

Statistical Analysis

The study population was characterized according to sociodemographic factors and aspects related to quality of life. For the characterization, we used indicators of absolute (N) and relative (%) distribution, medians (50th percentile), mean values and their standard deviations. Quality of life indicators were analyzed according to the WHOQOL -Bref guidelines, with mean scores and standard deviations for each domain.

Ethical Aspects

This study was approved by the Research Ethics Committee of the proposing institution, according to CAAE nº 34746620.6.0000.5142 and Opinion nº 4.317.149, from October 02, 2020. Each participant registered his or her agreement to participate in the study, either physically or electronically, via the Informed Consent Form. The procedures adopted in this research complied with the Criteria for Ethics in Research with Human Beings, according to Resolution No. 466/12 of the National Health Council System (CNS).

RESULTS

Of the 428 confirmed cases of COVID-19 living in the municipality of Alfenas - MG, allocated for interviews, 211 were lost for different reasons (Table 1). Considering only the "refusals" and "three or more unsuccessful attempts", the non-response rate was equivalent to 25.5% (38+71) / 428, discarding registration errors in the database used for the source of allocation of the study population, false positives, and deaths.

Table 1 - Main reasons for losses. Alfenas – MG, 2020.

Cause	N	%
Three or more unsuccessful contact attempts	38	18.1
Wrong address and/or phone number	71	33.6

Deaths	10	4.7
False positives	09	4.3
Person not able to answer the interview	03	1.4
Refusals (after 3 or more attempts)	71	33.6
Address in rural area	09	4.3
total	211	100

Source: Elaborated by the authors

Regarding the socioeconomic characteristics of the study population were found: female (55.8%) male (44.2%), in the age group 20-29 (4.1%), 30–39 years (9.7%), 40–49 years (15.7%), 50–59 years (17.5%), 60–69 years (30%), 70-79 years (17.5%) and above 80 years (5.5%). In the same period, the level of education was 0–3 years (13.8%), 4–7 years (34.2), 8–12 years (29.0) and 13 years or more (23.0). The marital status without partner was 30.9% and with partner was 69.1%. Regarding per-person income in the 1st third < R$ 712.66 (32.3%), 2nd third R$ 712.66 - R$ 1156.33(33.3%) and 3rd third ≥ R$ 1156.33(34.4%). Regarding complications of COVID-19, 202 participants reported that they had complications, with 1(0.5%) having two, 9 (4.4%) having three, 37(18.2%) having four,

65(32%) having five, and 90(44%) having six complications, showing that most had more than three complications. The most cited complications were hematological (97.5%), neurological (93.1%), vascular (92.6%), cardiac (90.6%), respiratory (61.6%) and other (77.8%).

According to table 2, in the WHOQOL-BREF assessment of quality of life in community and inpatient cases, the average perception of quality of life for inpatients was 3.8 and satisfaction with health was 3.7. For community patients, the average perception of quality of life for inpatients was 3.9 and satisfaction with health was 3.8 and the most affected domains in the inpatients were the physical 70.0 and the environment with a mean of 70.4, and in the community residents the physical 71.2 and the environment 74.1.

Table 2 - Average of Quality-of-Life domains of community and inpatient cases.

Baseline (T0)

WHOQOL – BREF	**Cases**			
Facets/Domains	**Admitted (n=60)**		**Community (n=157)**	
	Average	**SD**	**Average**	**SD**

Perceived quality of life	3.8	-	3.9	-
Satisfaction with health	3.7	-	3.8	-
Physical	70.0	19.3	71.2	18.7
Psychological	75.6	15.9	76.1	16.3
Social relations	76.7	22.5	77.3	20.1
Environment	74.4	11.7	74.1	14.7
Total score	78.6	9.8	79.2	10.7

SD = standard deviation.

no significant differences were identified between cases (analysis of variance).

Source: Prepared by the authors

As shown in table 3 in the WHOQOL-BREF assessment of Quality of Life, the overall average of perceived quality of life was 3.9 and health satisfaction was 3.8, and the most affected domains were the physical and the environment, with an average of 70.8 and 74.2, respectively.

Table 3 - Indicators of quality of life - WHOQOL BREF in the study population. Alfenas - MG, 2022.

WHOQOL – BREF *Facets/Domains*	Average	SD
Perceived quality of life	3.9	-
Satisfaction with health	3.8	-
Physical	70.8	18.8
Psychological	75.9	16.1
Social relations	77.1	20.7
Environment	74.2	13.9
Total score	79.1	10.4

SD = standard deviation.

DISCUSSION

Of the 428 selected for the survey sample, 211 did not participate due to various reasons explained in Table 1. Considering only the "refusals" and "three or more unsuccessful attempts", the non-response rate was equivalent to 25.5% (38+71)/428, discarding the registration errors in the database used as a source for allocation of the study population, false positives, and deaths.

Thus, the final sample included 217 participants, being predominantly female (55.8%), over 60 years old, married to a partner, elementary school education, and with an income of approximately 1 minimum wage. The socioeconomic data gender, age, education, and income per person of this study are corroborated by the study [16] developed in the State of Sergipe - Brazil.

The systematic review [17] also found that most were female, regarding age, found that the mean age of the studies ranged from 33.9 ± 11.73 to 69.5 ± 0.35 years. Regarding marital status with a partner, our data coincide with the study [18] and differ in the level of education variables, where it was found that most were college graduates; these data show the cultural differences between the two countries. In China, the illiteracy rate is 4.9%, while in Brazil, the rate is 7.0[18,19].

Studies have shown [20,21] that in the outbreak of COVID-19, women have perceived a significantly higher level of post-traumatic stress than men. Therefore, women who have experienced COVID-19 infection appear to be more likely to develop psychological problems and have worse physical health recovery, suggesting that adequate psychological intervention and care should be provided for this vulnerable population even after discharge.

Covid-19 causes a variety of symptoms and can cause persistent symptoms leading to illness not only in the elderly and individuals with comorbidities, but also in young adults and people without comorbidities. Coronavirus can lead to interstitial pneumonia, respiratory distress syndrome, and multiple organ failure. It can affect various organs and systems of the body, such as the heart, lungs, brain, and nervous system, and affect mental health by causing anxiety, depression, and sleep disturbances. It can also cause problems in the musculoskeletal system, causing organ fatigue [4, 21, 22].

Even those patients who recover may continue to experience hypoxia, shortness of breath, and reduced work capacity; these medical complications can affect 11%-24% of Covid-19 patients and may present with symptoms long term, even after three months of Covid-19 disease onset. Of all these complications, Covid-19 can lead to a worsened quality of life for infected patients, both in the short and long term [1, 2, 23].

The studies [16,18] have shown that Covid-19 affects the physical and mental aspects and consequently a worsened Quality of Life. The results of this research corroborate these studies where the average perception of quality of life was 3.9 and satisfaction with health was 3.8, considered regular, and the most affected domains were the physical 70.8 and the environment 74.2.

A systematic review [17] identified 8 studies that met the eligibility criteria and investigated the effects of COVID-19 on the quality of life of individuals. The results of this systematic review indicated that the pandemic

affected the quality of life due to the variables anxiety and depression, post-traumatic stress and quality of sleep that were compromised.

Another Systematic Review [24], aiming to search for current evidence on the impact of Covid-19 on patients' quality of life and health after illness, gathered 7 studies and found that Covid-19 causes changes in patients' quality of life and health according to the severity of the disease, complications, and treatment, as well as the individuals' own characteristics that may influence the severity of the disease. It concluded that Covid-19 influences patients' quality of life after the disease, leading to a significant worsening of physical and mental health, which may persist for months.

The findings of this research indicated that the most affected domains were the physical mean 70.8 and environment 74.2; similar data to the meta-analysis[25], which also showed physical and locomotion impairment where 58% of post-COVID-19 patients reported low quality of life, and the grouped analysis of individual factors in the EQ-5Q-5L questionnaire showed that 41.5% had pain/discomfort, 37.5% anxiety/depression, followed by 36% mobility problems, 28% problems with usual activities, and only 8% with self-care problems.

The study[26] that compared quality of life, perceived health, and income between families with and without socioeconomic risk during the COVID-19 pandemic in a sample of mothers of healthy term-born infants ($\geq$ 37

weeks) who were subdivided into two groups: 1) socioeconomic risk (G-R), and 2) no socioeconomic risk (G-SR) by the WHOQOL-Bref quality of life instrument, found significant difference between G-R and G-SR groups for the environment domain (p= 0.001) and the perception about health during the COVID-19 pandemic of mothers in G-SR was between good (52.6%) and regular (36.8%) while most mothers in G-SR assessed their health as good (81.8%). It concluded that families with low socioeconomic status showed worse quality of life regarding the environment domain, worse health perception, and decreased family income when compared to families without socioeconomic risk.

The results of this research corroborate with the study cited above; despite not having compared the socioeconomic differences, most fell into low socioeconomic level since they live on approximately 1 minimum wage, demonstrating that the socioeconomic condition affects the environment domain.

Thus, the results of this study also identified the effects of COVID-19 on the quality of life of the participants, especially the physical and environmental domains. It is inferred that this is due to the number of complications reported and the aspects of confinement required during the pandemic period, where the participants had to move away from their loved ones, their workplace, many of them lost their jobs, their leisure activities, and

social events, influencing the environmental domain.

Therefore, the high number of complications caused by COVID-19 that negatively affect quality of life, these results have been evidenced in other studies, indicating the need for rehabilitation and health promotion programs to minimize these complications [23,24,27].

CONCLUSION

This research indicated that COVID-19 in the studied population compromised the quality of life, and the most affected aspects were the physical and environmental domains. Identifying the factors that impact the Quality of Life of the population are significant indicators to plan the assistance and direct the Public Health Policies.

It is up to health professionals to evaluate and plan individualized care, to remedy the deficiencies found and improve the Quality of Life of this population. The limitations of the study are the cross-sectional design and the number of losses that occurred, emphasizing caution in generalizing the data.

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