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QUALITY OF LIFE OF INFORMAL MINING WORKERS

QUALIDADE DE VIDA DE TRABALHADORES INFORMAIS DA MINERAÇÃO

CALIDAD DE VIDA DE LOS TRABAJADORES INFORMALES DE MINERÍA

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ABSTRACT

***Objective*:** evaluation of the quality of life of informal mining workers in Seridó, a region of the State of Paraíba. ***Method*:** a descriptive, transversal and analytical study conducted in a territorial area in Paraiba denominated the Province Pegmatítica da Borborema with 371 informal mining workers. For the data collection it was used the *Medical Outcomes Study 36-item Short-Form Health Survey* (SF-36), analyzed from descriptive and inferential statistical methods (significance level of 5%). The research project was approved by the University of Franca Research Ethics Committee, CAAE 07052613.8.0000.5495. ***Results*:** the general average for the quality of life presented was of 80,17±11,89 points. Considering the domains, the highest score was of the functional capacity (92,03 ±15,75 points) and the worst averages were for the vitality (69,26±16,13 points). ***Conclusion*:** this study demonstrates that informal work presented little commitment with the quality of life of the workers. ***Descriptors*:** Work, Mining, Quality of Life, Health Promotion.

RESUMO

***Objetivo*:** avaliar a qualidade de vida de trabalhadores informais da mineração. ***Método*:** estudo descritivo, transversal-analítico, realizado na área territorial paraibana denominada de Província Pegmatítica da Borborema com 371 trabalhadores informais da mineração da região do Seridó paraibano. Para a coleta de dados foi utilizado o *Medical Outcomes Study 36-Item Short-Form Health Survey* (SF-36), analisado a partir de métodos de estatística descritiva e inferencial (nível de significância igual a 5%). O projeto de pesquisa recebeu parecer favorável do Comitê de Ética em Pesquisa, CAAE 07052613.8.0000.5495. ***Resultados*:** a média geral para qualidade de vida dos trabalhadores foi de 80,17±11,89. Entre os domínios avaliados, o maior escore foi obtido para a capacidade funcional (92,03±15,75), e o menor para a vitalidade (69,26±16,13). ***Conclusão*:** este estudo vem demonstrar que a forma de trabalho informal apresenta pouco comprometimento com a qualidade de vida dos trabalhadores. ***Descritores*:** Trabalho, Mineração, Qualidade de Vida, Promoção à Saúde.

RESUMEN

***Objetivo*:** evaluar la calidad de vida de los trabajadores informales de minería en la región minera de Paraíba, Seridó. ***Método*:** este es un estudio descriptivo, transversal analítico conducido en Paraíba en el ámbito territorial llamado Provincia Pegmatítica da Borborema con 371 trabajadores mineros informales. Para recoger los datos se utilizó el *Medical Outcomes Study 36-item Short-Form Health Survey* (SF-36) y se analizaron utilizando métodos de estadística descriptiva e inferencial (nivel de significación de 5%). El proyecto de investigación ha recibido un dictamen favorable del Comité de Ética en la Investigación de la Universidad de Franca, CAAE 07052613.8.0000.5495. ***Resultados*:** la media general de la calidad de vida de los trabajadores fue de 80,17±11,89. Entre las áreas evaluadas, la puntuación más alta se obtuvo para la capacidad funcional (92,03±15,75) y la más baja para la vitalidad (69,26±16,13). ***Conclusión*:** este estudio demuestra que el trabajo informal muestra poco compromiso con la calidad de vida de los trabajadores. ***Descriptores*:** Trabajo, Minería, Calidad de Vida. Promoción de la Salud.

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INTRODUCTION

The concerns and challenges faced by researchers in the health area and work safety have been directed to ensure protection against the negative repercussions of work, which may impair their quality of life (QOL).[1] The QOL and worker health, undoubtedly has been highlighted today, after all is "right to life and without it, there is no: work, capitalism and profit".[2:765]

Although studies on the subject will be developed in different contexts and realities and, sometimes, very complex[3-6], there is little evidence in the mining area, one of the main sources of income that drives numerous municipalities of Brazil and Paraiba territory.[7] Specifically, insufficient approaches that address QOL of miners, regardless of their insertion in the labor market. This reality is perceived both nationally and internationally.

The work process in the mineral activity presents risks that expose workers to hazardous conditions, unhealthy and painful[2], which may negatively impact on workers' QOL. The assessment of QOL among workers has been important to describe the satisfaction with living conditions, health and work and as an important predictor for help define public policy strategies. The term is related to the meaning given to the objective of conditions of life.[8] It is a subjective construction factor, which can only be achieved when the individual can strike a balance between family relationships, affective, social, labor, health and environment together to their religious beliefs, spiritual and cultural.[9]

Considering the specifics of work in mining, many are the poor working conditions outlined in national[2,7,10] and international[11-2] studies, which have implications on the QOL of the area worker.

This framework urges the need for studies that address the aspects inherent to the work process, the implications on the health of miners, but especially that seek to evaluate their QOL, in order to support the implementation of interventional programs and in the health promotion. Quality of life is the individual apprehension about his own life, involving "the care of body in the physical, mental and sexual aspect; good nutrition; physical activity; cultivating friendships and spirituality; the work less in search of free time; the practice of leisure".[9:10]

Reflecting about mining, especially the informal, aimed seeks to:

- Evaluating the quality of life of informal mining workers.

METHOD

This is a descriptive study, cross-analytical, held in Paraiba territorial area called Pegmatitic the Borborema Province, located in the Seridó region of Paraiba. The region involves the municipalities of Junco do Seridó, Salgadinho, Santa Luzia, São José do Sabugi, São Mamede, Várzea, Baraúna, Cubati, Frei Martinho, Juazeirinho, Nova Palmeira, Pedra Lavrada, Picuí, Seridó, Tenório, Pocinhos e Assunção.

The territory has mining the main economic activity due to the regional geological potential. The activity has allowed the establishment of man to the field and its interaction with long periods of drought, common to the locality, characterized by rudimentary extraction techniques, which mobilized a large contingent of workers under informal conditions.[13]

The research universe comprised five thousand formal and informal workers, of which 70% (three thousand five hundred) are informal.[14] From the population of three thousand five hundred informal workers, the sample consisted of 371 individuals, whereas a level of confidence of 95% and margin of error of 4,8%, obtained with the help of computer program DIMAM 1.0.[15]

As inclusion criteria there were adopted: to be informal workers in the mining sector; It is linked to local mining cooperatives; be 18 or older and sign the Informed Consent and Informed by accepting voluntarily participate. There were excluded individuals who worked in the industry for less than 12 months, who were in sick leave or absent from work in the collection period.

For data collection it was used the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) questionnaire or Generic Quality of Life, validated in Brazil by Ciconelli *et al*.[16]. In Brazil, the SF-36 is multi-dimensional and consists of 36 items, contemplating eight dimensions: physical functioning, bodily pain, general health, vitality, social functioning, emotional, mental health and more a question of comparative evaluation between current health conditions and a year ago; measures both negative aspects of health (disease or illness) and positive (well-being). To obtain the total score of the questionnaire, the answers were added (from pre-established notes), turning them into notes of the eight domains, ranging from 0 (worst) to 100 (best). The score of each domain appears in positive scale, where the higher the score, the better the quality of life.[16]

It is noteworthy that as the instrument was standardized considering the mean scores, even with non-parametric data, we used the average in the description of results.

Data collection took place between August 2013 and June 2014, having been effected with the assent of the Research Ethics Committee (CEP) of the University of Franca (UNIFRAN) as CAAE nº 07052613.8.0000.5495 / Opinion Number: 284.639, noting the assumptions of Resolution nº 466/12 of the National Health Council (CNS) of the Ministry of Health (MOH) which incorporates the four basic principles of bioethics: autonomy, non-maleficence, beneficence and justice.[17]

As support to the processing and analysis of data there were used Microsoft Excel and the Statistical Package for Social Sciences program (SPSS - version 21.0). After applying the Kolmogorov-Smirnov test and Shapiro Wilk to verify the non-parametric nature of the data we used the Mann Whitney test for comparison of scores between different genders. To verify the correlation between the domains of quality of life with age, working hours and hours of work it applied the Spearman correlation coefficient. For all analyzes the level of significance was 5%.

RESULTS

By social and demographic data for the informal workers, it was found that the majority were male (93,0%), married (53,1%), with an average age equal to 36,56±11,45 years old (median = 35,00) and low level of education (incomplete primary school + primary school equal to 66,8%). The average daily working time was 8,24±1,04 hours per day (median = 8,00), length of service in the activity 67,06±74,74 months (median = 36,00) and average monthly income from 874,12±R$ 315,33(median=800,00).

Among the domains of quality of life the highest scores were obtained for functional capacity (92,03±15,75 points), followed by emotional aspects (89,71±24,87 points). The lowest scores were observed for the domains vitality (69,26±16,13 points) and overall health (69,56±17,55 points). The overall quality of life showed an average score of 80,17±11,89 points and median of 82,18 points (Table 1).

Table 1. Statistical summary for the domains of quality of life of informal mining workers on Seridó region – PB, 2013/2014

Domains of SF-36	Average (m)	Standard Deviation (SD)	Minimum	Maximum	Median (Md)
Functional capacity	92,03	15,75	0,0	100,0	100,0
Physical aspects	89,37	24,01	0,0	100,0	100,0
Pain	73,55	28,97	20,0	100,0	100,0
General state of health	69,56	17,55	7,0	100,0	70,0
Vitality	69,26	16,13	25,0	90	70,0
Social aspects	84,13	19,44	25,0	100,0	100,0
Emotional aspects	89,71	24,87	0,0	100,0	100,0
Mental health	73,70	13,69	36,0	88,0	76,0
General quality of life	80,17	11,89	28,31	97,25	82,18

Table 2 shows the average values for the fields of comparatively quality of life between the genders. Significant differences were observed ($p<0,05$) between the domains pain, for which scores were higher in females (90,90 x 76,69) and mental health with higher scores for males (77,85 x 60,57).

Table 2. Median values of the scores for each domain of quality of life among male and female casual workers of the Seridó region – PB, 2013/2014.

Domains of SF-36	Gender	
	Male Median	Female Median
Functional capacity	97,33	98,25
Physical aspects	93,46	97
Pain	76,69*	90,90*
General state of health	70,52	60
Vitality	71,28	65
Social aspects	90,03	92,64
Emotional aspects	93,07	97,33
Mental health	77,85**	60,57**

*p < 0,05; **p<0,01 indicates significant difference according to Mann Whitney test.

Table 3 shows the effects of correlation between the domains of quality of life with the variables: age, working time and workday. For all domains were significantly correlated with one or more variables and, except for the mental health domain, for all the correlation was negative.

Table 3. Correlation coefficients between the domains of quality of life with the variables age, working time and daily journey (hours).

Domains of SF-36	Age	Time of work	Daily journey
Functional capacity	-0,22**	-0,24**	-0,11*
Limitation of physical aspects	-0,11*	-0,09	-0,10*
Pain	-0,21**	-0,14**	-0,03
General state of health	-0,11*	0,07	0,13**
Vitality	-0,11*	0,05	0,06
Social aspects	-0,12*	0,05	0,01
Emotional aspects	-0,09	-0,14**	0,01
Mental health	-0,10	0,12*	0,13*

*p < 0,05; **p<0,01 according to Spearman's Correlation.

DISCUSSION

This study revealed that the average overall scores of all domains was 80,17±11,89 points. The result was considered positive, because they hoped to find a lower level of quality of life for 70 points because of the particularities of the occupation and because workers are inserted into the informal market, since 70% of them play informal activities in the region, one of the bottlenecks for the legalization of activity;[16] yet such workers are more exposed to precarious, autonomous, clandestine work, absent registration or any kind of employment.[7,10,13]

This is a quantitative time-series study conducted with five workers diagnosed with silicosis at two different times (before and after change of job) found maximum average of 71,42 points and a low of 54,97 points.[18] Another survey of women in mining Indian averaged 62,7 points.[19] The differences found in this study and in those once may result from two situations that seem plausible: the multiplicity and the subjective nature of the term QOL, which features various conceptions[20] and the diverse nature of the biopsy samples. While dealing with mining subjects, they are different realities, with people of different nationalities and cultures, enjoying various social and economic indicators. The QOL is a social construct influenced by cultural elements, with multidimensional and changing attributes.[21]

Informal workers of this study showed little overall commitment in relation to QOL domains because of the eight domains evaluated, only two (vitality and general health) had an average of less than 70. The highest scores were found for functional capacity and emotional aspects with an average of 92,03±15,75±24,87 points and 89,71 points respectively. The lowest values were for the domains vitality and general health with an average of 69,56±17,55±16,13 points and 69,26 points respectively. Between the two highest scores of the SF-36 valued in their studies, functional capacity (80,1 points) and the emotional aspects (73,1 points), respectively.[18] Considering the most compromised areas stand out from the state general health (45,0 points) and the emotional aspects (55,7 points).[18] Functional capacity (50,1±26,1 points) and physical (57,8±44,6 points) were the lowest scores.[19]

Considering the most negatively affected domains (vitality and general health), it states that the vitality relates to the level of tiredness, fatigue and exhaustion, and the general health of the way the individual evaluates his health.[22]

It is believed that the results of the quality of life of present research workers may have shown commitment in the areas cited due to work in mining have characteristics like informality that prevails in the sector, leading to insecurity in cases of health injuries, inadequate facilities, exposure to sun and rain, the absence of sanitation facilities and to contemplate the basic needs, triggering the lack of hygiene, and the failure to use personal protective equipment (PPE). Several factors are associated with lack of PPE, highlighting the importance given to them, ignorance about them, insufficient resources to acquire them and uncomfortable in the use, heat, loss of sensation, among others.

Some workers, because they live far from workplaces, remain week in makeshift environments (mud houses, with poor hygiene conditions), an important factor for the transmission of diseases and proliferation of vectors[10,13], and can significantly affect the health and quality of life.

Regarding the difference found between the genders, the median scores of pain domain was significantly higher for females (90,90; p<0,05) compared to the median of male scores (76,69; p<0,05). It is believed, however, that women in this study have shown more positive results in relation to the QOL pain in the area due to the fact their jobs in mining activity are less heavy, requiring less of the musculoskeletal system and also by age, they were younger compared with the men of this investigation.

Another possible explanation is the difference in pain threshold and the painful experience between genders, since women have a higher threshold than men.[23-4] Also, another approach reports that females feel, or at least report feeling more pain than the male.[25] We must also consider the age, as the influence of age in the best sense of the painful experience.[23,26]

In the area of mental health, men have higher scores with a median of 77,85 ($p<0,01$) significantly higher than those presented by women, which presented a median of 60,57. These results may arise from gender differences in that, in general, women seem to have more negative perceptions about the way of quality of life domains. Study specific age group, contemplating differences between gender covenants of this idea. [27]

The similarity of this study, another approach[28] also found a tendency for men present better QOL in the mental health domain. Similar data can be seen in other research work, gender and mental health among firefighters, it was found that the indicators of depression, stress, general mental health commitments prevailed for the female sample.[29] The data is troubling for women, for mental health in the SF-36 reflects sense of nervousness, depression, loss of emotional control, beyond the psychological well-being.[23]

The findings of this study also showed a significant negative correlation between the SF-36 and age. Indicating that the older, worse perception of QOL among workers. Similar results, albeit with different populations, were found in a study that evaluated the quality of life of older people in a city in Southern Brazil[29]

Working time had a negative effect and significance to the functioning, bodily pain and emotional aspects, ie the working time tends to reduce the self-assessment of those areas. This result corroborates the literature and shows that time and prolonged working hours negatively affect worker's QOL.[6]

The data showed also that the functional capacity and the limitation of the physical aspects decreased as the daily hours of work increased. Excessive working hours can lead to physical and mental fatigue of the worker, enabling the emergence of diseases and the reduction of QOL among individuals. Authors[6] make considerations about the negative impacts of daily working hours on the parameters of life of workers.

The general health and mental health has increased to the extent that the daily working time is also increased. We do not know the reasons that such data is allowed presented with this configuration; however, it is believed to have daily work duties assists in the general state of health and mental although not corroborate the findings of other research[30], whose considerations emphasize that number of working hours is determinant of stress.

Before the results of this survey, the main limitation of this study was the subjective nature of quality of life, which may have determined that the data have submitted such satisfactoriness the overall quality of life (80,17 points).

CONCLUSION

Informal mining workers in the region of Seridó/PB have shown that the form of informal work presented little commitment to the quality of life and age, working time and workday showed negative correlations with some domains of QOL.

Considering the general characteristics of the findings resulting from this research, new studies are pertinent to settle doubts and consider the explanations, as though with workers without formal employment, being a cross-sectional study with questionnaires, one is prone to reliability of information provided as well as the physical and emotional state of the sample at the time of data collection; Also, it is essential that health promotion actions are implemented, especially effecting up the National Health Promotion Policy, as when improving the general aspects of life and health, thus, benefit the dimensions of QOL. Investing in public policies on the issue age, working hours and working day is essential not to harm the QOL of this population.

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