# ORIGINAL ARTICLE

# Health needs analysis based on the functional assessment of workers seen in primary care

## Análise de demandas a partir de uma avaliação funcional de trabalhadores atendidos na atenção primária à saúde

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**ABSTRACT |** **Introduction:** Illness in workers and the configuration of health care services for this population constitute a major public health challenge in Brazil. **Objectives:** To evaluate factors associated with the activities and participation components of functioning in workers seen in primary care. **Methods:** This was a cross-sectional study of 111 workers who completed a sociodemographic, occupational, and health questionnaire, as well as the World Health Organization Disability Assessment Schedule 2.0. Results were analyzed using descriptive methods, the Mann-Whitney U test, and Spearman correlation coefficients. **Results:** Most workers were women (63.1%), with a mean age of 36.54 years, single (48.6%), with secondary education (33.3%), and a sedentary lifestyle (68.5%). Over 70% rated their health as "very good/good," were actively employed, and reported difficulties on at least one item of the World Health Organization Disability Assessment Schedule. Carrying out household activities, working, standing up, learning new tasks, and dealing with strangers were the items most frequently associated with mild/moderate disability. Walking for long distances, feeling emotionally affected, and engaging in community activities were the items for which the most severe/extreme difficulties were reported. Functioning was associated with education (p = 0.009), occupational status (p = 0.000), and perceived health (p = 0.000). The results indicated that less-educated individuals who were not actively working and had poor perceived health had the highest levels of disability. **Conclusions:** Our results identified several functional difficulties in the working population. Interdisciplinary strategies are needed to address the activity limitations and restrictions to participation in workers seen in primary care.

**Keywords |** international classification of functioning; disability and health; occupational health; primary health care; health assessment.

**RESUMO |** **Introdução:** O adoecimento do trabalhador e a configuração da rede de cuidados à sua saúde têm sido apontados como desafios para a saúde pública no Brasil. **Objetivos:** Avaliar fatores associados às demandas funcionais, nos componentes atividade e participação, de trabalhadores atendidos na atenção primária. **Métodos:** Estudo transversal com 111 trabalhadores avaliados por questionário sociodemográfico, ocupacional e de saúde e pelo World Health Organization Disability Assessment Schedule 2.0. Empregou-se análise descritiva, teste U de Mann-Whitney e correlação de Spearman. **Resultados:** A maioria dos trabalhadores era do sexo feminino (63,1%), com idade média de 36,54 anos, solteiros (48,6%), com ensino médio completo (33,3%) e sedentários (68,5%). Mais de 70% autoavaliaram a saúde como "muito boa/boa", estavam ativos no trabalho e relataram dificuldade em pelo menos um item do World Health Organization Disability Assessment Schedule. Atividades domésticas, trabalho, manter-se de pé, aprender novas tarefas e lidar com desconhecidos foram itens avaliados com incapacidade leve/moderada. Caminhar grandes distâncias, sentir-se emocionalmente afetado e engajamento em atividades comunitárias apresentaram dificuldade grave/extrema. As demandas funcionais foram associadas com escolaridade (p = 0,009), situação no trabalho (p = 0,000) e autoavaliação de saúde (p = 0,000). Os resultados indicam que trabalhadores com menor escolaridade, afastados do trabalho e com pior autopercepção de saúde apresentam mais incapacidade. **Conclusões:** Os resultados identificaram demandas funcionais em trabalhadores e indicam a necessidade de direcionar ações interdisciplinares para diminuir limitações em atividades e restrições na participação da população trabalhadora atendida na atenção primária.

**Palavras-chave |** classificação internacional de funcionalidade; incapacidade e saúde; saúde do trabalhador; atenção primária à saúde; avaliação em saúde.

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# INTRODUCTION

Illnesses in the working population constitute a major public health challenge in Brazil. This has been aggravated by the growing prevalence of occupational diseases,[1] their high treatment costs, and the number of economic sectors affected by absenteeism due to temporary or permanent disability.[2] In 2017, 549,405 occupational accidents were reported in Brazil, with 61.9% classified as typical accidents, 18.3% as commuting accidents, and 1.7% as work-related illnesses.[3] Informal sector workers and the unemployed have especially poor health indicators, including decreased access to health care and a lower likelihood of seeking and using these services.[4] In addition to work-related illnesses and injuries, population aging and the increased prevalence of chronic illnesses have contributed to increased health care utilization in the working population.[4]

The growing demands and complexity of the issues experienced by these individuals require the consolidation and strengthening of the occupational health network. Currently, occupational health initiatives at all levels of care in the Brazilian Unified Health System (Sistema Único de Saúde; SUS) are implemented through the National Workers' Health Network (Rede Nacional de Atenção Integral à Saúde do Trabalhador; Renast), which comprises several health care and surveillance services in addition to developing occupational health initiatives.[5] In the context of primary health care (PHC), such initiatives should include health surveillance programs, outpatient care, health education strategies, diagnosis, treatment, and the systematic collection of work history data to establish an association between illness and work.[6] In this context, professionals in the Extended Family Health and Primary Care Center (Núcleo Ampliado de Saúde da Família e Atenção Básica; NASF-AB) should map out the productive activities in their surroundings, evaluate working conditions and environments, and actively search for cases of work-related illness.[6]

In addition to these actions, the introduction of systematic functional assessment in PHC could improve the identification of specific demands, help direct treatment, and contribute to the planning of occupational health initiatives and the flow of patients through the health care system.[7] The International Classification of Functioning, Disability and Health (ICF) can be used to construct health indicators to evaluate the functioning of workers seen in PHC.[7,8] The use of the ICF model in the organization of health care services could contribute to multidisciplinary care and therapeutic flow.[8] Additionally, the implementation of this framework in PHC services would allow for the development of patient-centered preventive interventions.[9]

Therefore, based on the ICF model, this study evaluated functioning in the domains of activity and participation in workers seen in PHC and investigated the association of these variables to sociodemographic, occupational, and lifestyle factors.

# METHODS

This was an observational, cross-sectional study developed as part of a project entitled "Health and ability to work in workers seen at Occupational Health Reference Centers (Centros de Referência em Saúde do Trabalhador; CERESTs): an experience in the Triângulo Mineiro," approved by the research ethics committee of the Universidade Federal do Triângulo Mineiro (UFTM) (report No. 2394/2012). The sample consisted of workers seen in PHC services in a city in the Triângulo Mineiro region, in Minas Gerais, Brazil. All eligible participants were informed of the goals and procedures involved in data collection. Those who agreed to participate signed an informed consent form, as recommended by human research guidelines set forth in Resolution No. 466/12 of the National Health Council (Conselho Nacional de Saúde).[10]

The study was conducted in a convenience sample of 111 workers seen in primary care settings. The recommended sample size was calculated to be 103 based on a 95% confidence interval (95%CI), a maximum error of 3 points, and an average standard deviation (SD) of 15.5. Inclusion criteria were: males or females aged 18 to 60 years, in the workforce regardless of occupational status (active, inactive, or unemployed) or type of employment (formal or informal), seen in

one of the primary care units in the city. Exclusion criteria were unavailability for participation, health conditions that interfered with comprehension or response accuracy, and having no work history according to self-report.

Data were collected from March to October 2014 in PHC units across the city. The city is divided into three health care districts (I, II, III) with a total of 28 health units, nine Matrix Support Units, 51 Basic and Family Health Units (Estratégia Saúde da Família; ESF), seven support units, and six NASF-AB.[11] This study was conducted in nine randomly selected (Basic and Family) Health Units, three in each health district.

Participants completed a demographic, occupational, and health information questionnaire developed specifically for this study. The sociodemographic variables investigated included gender, age, marital status, number of children, and education. The occupational data pertained to occupation, income, and current work status. Health information included lifestyle habits such as physical activity, smoking status, alcohol intake, and perceived health. Regular physical activity was defined as 150 minutes of moderate activity per week (approximately 20 minutes per day) or 75 minutes of intense physical activity per week (approximately 10 minutes per day).[12] Smokers were classified based on whether they reported smoking at the time of the study, regardless of frequency or number of cigarettes consumed. Alcohol use/abuse was defined as the consumption of 60 g or more (five or more doses) of the substance on at least one occasion in the past month.[13] Perceived health was evaluated using the following question, "How would you rate your general health in the past 30 days?" This question was answered on a five-point Likert scale with categories ranging from very good to very poor.

Functional difficulties were evaluated using the brief World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), which has been translated and adapted for use in Brazil.[14] This instrument was developed by the World Health Organization (WHO)[15] and is compatible with the ICF framework. The short version of the WHODAS 2.0 contains 12 items and examines how people perform various activities (including the use of assistive devices or help from another person). Difficulties performing each activity in the past 30 days were assessed on an ordinal five-point scale, where 0 indicates no difficulty and 5 indicates the inability to perform the activity.[14] The difficulties evaluated included increased effort, discomfort or pain, slowness, and/or changes in the way the person carries out the activities. The total score on the 12-item WHODAS 2.0 ranges from 0 to 100, where higher scores correspond to greater disability.[14]

Data were analyzed using SPSS (IBM®), version 20.0. Descriptive analyses included frequencies and percentages for categorical variables and means and standard deviations for continuous variables. For this study, perceived health status was dichotomized into "very good and good" and "fair, poor, and very poor." The association of functioning to sociodemographic, occupational, and health variables was examined using Mann-Whitney U tests and Spearman correlation coefficients. In all tests, significance was considered at 5%.

## RESULTS

Most of the workers evaluated were female (63.1%) and the mean age of the sample was 36.54 (SD, 13.40) years. Less than half (48.6%) were single and 33.3% had secondary education. The main risk factors reported were a sedentary lifestyle (51.4%) and smoking (40.5%). The question on perceived health revealed that 76.5% of workers rated their health as "good/very good" and 23.5% as "fair/poor." The mean income in the sample was R$ 2,845.14 (SD, R$ 2,195.54). Most participants (69.4%) were actively employed while 30.6% were not. Those who were employed at the time of the study had been in their current job for an average of 4.4 (SD, 6.4) years or 52.8 months. Those who were not employed had been out of work for a mean of 9.5 (SD, 19.18) months. Table 1 contains additional details on the sociodemographic, occupational, and health-related characteristics of the sample.

Functional assessment scores, as measured by the 12-item WHODAS 2.0, ranged from 12 to 39 with a mean of 16.53 (SD, 5.56) points on a scale of 0 to 100. A total of 77.5% of workers reported difficulties

in at least one item of the instrument. The activity and participation items for which participants reported mild to moderate disability were: being emotionally affected by their health problems (27.9%); joining in recreational and leisure activities in the community (26.1%); taking care of household responsibilities (26.1%) and day-to-day work (25.2%), standing for half an hour (24.8%), learning new tasks and dealing with strangers (23.4%, respectively). The items for which workers most frequently reported severe to extreme difficulty/inability included walking for one kilometer (9.9%), followed by being emotionally affected by their health problems (7.4%), and participating in recreation and leisure activities in the community (5.4%) (Table 2).

Limitations in these activities and restrictions to participation were then analyzed in terms of their association with sociodemographic variables (Tables 3 and 4). Functional disability was significantly associated with education, as workers with higher education levels had lower disability scores (p = 0.009). Age (p = 0.066), income (p = 0.355), gender (p = 0.150), and marital status (p = 0.988) were not significantly associated with functional disability.

The analysis of lifestyle habits revealed no association between functional disability and the risk factors alcohol intake (p = 0.262), smoking (p = 0.585), and sedentary lifestyle (p = 0.850) (Table 4). The comparison of functional disability scores between perceived health categories revealed a significant difference between participants (p = 0.000), where those with better perceived health showed lower levels of disability. Occupational status (active or inactive) was also associated with disability. Workers who were not on the job market (on leave, retired or unemployed) had higher levels of disability (p = 0.000) (Table 4).

## DISCUSSION

The sociodemographic profile of participants in this study was similar to that reported in previous investigations of public health patients, who are mostly young adults and women.[16] Our results demonstrated that patients' functional difficulties, which are rarely evaluated in PHC settings, are associated with education, perceived health, and occupational status.

Workers with low education levels had less functional difficulties than those with more years of education. Previous studies have also identified education as a predictor of functioning.[17,18] High education levels lead to improved access to information, health services, infrastructure, and social support, facilitating the adoption of healthy behaviors and habits.[17] This may explain why low education levels constitute a risk factor for increased disability and restrictions.[17,18] This is especially concerning for Brazil, where 7% of people aged 15 years or older are considered illiterate and only 27% have 8 years or more of education.[19]

Work has a global influence on the individual and their health, including its physical, psychosocial. and emotional dimensions.[20] Participants who were actively working had lower disability scores than those who were not. A similar pattern was observed with regard to time away from work. Participants who had been out of work for longer had greater functional impairment. Recent changes to labor law and socioeconomic characteristics in Brazil have led to the emergence of new occupational health needs.[21] Previous studies have also identified difficulties associated with being on leave and spending time away from work.[22,23] In addition to affecting disability levels, these variables have a negative effect on health and quality of life, as shown by comparisons between active and inactive workers.[22,24]

These observations support the role of work as an important determinant of physical and mental health in adults. Work allows individuals to improve their health, develop their skills, express their emotions, reaffirm their self-esteem, relate to others, develop their personality and construct their history and social identity.[20] Health care services for adult populations must take occupational information into account, and be set up as close as possible to people's homes and workplaces.[21] Time away from work is therefore an important factor to be addressed by prevention and promotion strategies, especially considering its economic impact on society.[1,2] Workers on leave have a higher risk of being bedridden and a higher frequency of chronic illness than active workers.[25] These data

**Table 1.** Sociodemographic and occupational characteristics of workers treated in public health services (n = 111), Uberaba, state of Minas Gerais, Brazil, 2018

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Gender | | |
| Female | 70 | 63.1 |
| Male | 41 | 36.9 |
| Education | | |
| Incomplete primary | 7 | 6.3 |
| Complete primary | 10 | 9.0 |
| Incomplete secondary | 4 | 3.6 |
| Complete secondary | 37 | 33.3 |
| Incomplete higher education | 28 | 25.2 |
| Complete higher education | 18 | 16.2 |
| Postgraduate | 7 | 6.3 |
| Education level (years) | | |
| 8 or fewer | 17 | 15.3 |
| More than 8 | 94 | 84.7 |
| Marital status | | |
| Single | 54 | 48.6 |
| Married | 46 | 41.4 |
| Separated/divorced | 10 | 9.0 |
| Widowed | 1 | 0.9 |
| Income (Brazilian minimum monthly salary) | | |
| Less than 1 | 6 | 5.4 |
| 1 to 2 | 28 | 25.2 |
| 2 to 3 | 21 | 18.9 |
| 3 to 4 | 11 | 9.9 |
| 4 to 5 | 12 | 10.8 |
| More than 5 | 33 | 29.7 |
| Current work status | | |
| Active | 77 | 69.4 |
| Inactive | 34 | 30.6 |
| Smoking | | |
| Yes | 45 | 40.5 |
| No | 66 | 59.5 |
| Sedentary lifestyle | | |
| Yes | 76 | 68.5 |
| No | 35 | 31.5 |
| Alcohol consumption | | |
| Yes | 14 | 12.6 |
| No | 97 | 87.4 |
| Perceived health status | | |
| Very good/good | 85 | 76.6 |
| Fair/poor/very poor | 26 | 23.4 |

support the development of PHC strategies and initiatives to improve occupational functioning.

Our results indicated an association between poor perceived health and functional disability. Participants who perceived their health to be "fair/poor" had the most activity limitations and restrictions to participation. According to the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística; IBGE), 66.1% of Brazilians rate their health as "good" to "very good" and 33.9% rate it as poor.[26] The self-assessment of health is an indicator of how individuals view their own health. It is related to biological factors such as the presence or absence of undiagnosed illnesses, as well as cultural factors including beliefs on issues such as risk behaviors, disease prevention, and well-being.[26] According to the literature, negative perceptions of health are associated with time away from work or unemployment, risk behaviors, and the presence of chronic illnesses.[24,25] Therefore, perceived health status may be a relevant variable in the assessment of functioning in workers seen in PHC.

**Table 2.** Functional disability assessment of workers treated in public health services (n = 111), Uberaba, state of Minas Gerais, Brazil, 2018

| Activities | No difficulty n (%) | Mild to moderate difficulty n (%) | Severe or extreme difficulty n (%) |
|---|---|---|---|
| Standing for up to 30 minutes? | 79 (71.2) | 27 (24.3) | 5 (4.5) |
| Taking care of household responsibilities? | 78 (70.3) | 29 (26.1) | 4 (3.6) |
| Learning a new task, such as how to get to a new place? | 84 (75.7) | 26 (23.4) | 1 (0.9) |
| Joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can? | 76 (68.5) | 29 (26.1) | 6 (5.4) |
| Have you been emotionally affected by your health problems? | 72 (64.9) | 31 (27.9) | 8 (7.4) |
| Concentrating on doing something for 10 minutes? | 89 (80.2) | 20 (18.0) | 2 (1.8) |
| Walking a long distance such as 1 km (approximately 10 blocks)? | 82 (73.9) | 18 (16.2) | 11 (9.9) |
| Washing your whole body? | 106 (95.5) | 4 (3.6) | 1 (0.9) |
| Getting dressed? | 101 (91.0) | 10 (9.0) | - |
| Dealing with people you do not know? | 83 (74.8) | 26 (23.4) | 2 (1.8) |
| Maintaining a friendship? | 91 (82.0) | 19 (17.1) | 1 (0.9) |
| Doing your day-to-day work? | 80 (72.1) | 28 (25.2) | 3 (2.7) |

**Table 3.** Correlation between functional disability and age, income, and time away from work (n = 111), Uberaba, state of Minas Gerais, Brazil, 2018

| Variables | Functional disability | |
|---|---|---|
| | r | p-value |
| Age | 0.175 | 0.066 |
| Income | -0.089 | 0.355 |
| Length of current employment | 0.096 | 0.317 |
| Time away from work | 0.456 | 0.000* |

* Significant Spearman correlation at 0.01.

Similar results to those of the present study have been observed in a previous investigation of functioning in PHC users, for whom worse physical or emotional health was associated with more functional problems and difficulties.[7] Another study that analyzed the ICF model and its association with perceived health, concluded that the perception of health was a better predictor of functioning than clinical diagnosis alone.[27] Despite its subjective nature, perceived health status has been included in previous studies due to its easy assessment and validity as a predictor of morbidity, health service utilization, and mortality.[18] Therefore, public health services in Brazil should be encouraged to collect information on perceived health, since this may contribute to the assessment of prognosis and the development of initiatives for the prevention and follow-up of functional or health impairments.

The functional assessment revealed that most workers reported difficulty in at least one item in the activity and participation domains. Participants reported mild to moderate impairment in seven items of the 12-item WHODAS 2.0: emotional alterations, joining in recreational and leisure activities in the community, performing household/domestic activities, working, standing for up to 30 minutes, learning new tasks, and dealing with strangers. These findings reflect those of previous studies on disability in the literature.[17,28] In a study where the WHODAS 2.0 was also administered to

**Table 4.** Association of functional disability and sociodemographic, occupational, and health-related variables (n = 111), Uberaba, state of Minas Gerais, Brazil, 2018

| Variables | Functional disability | p-value | 95%CI |
| --- | --- | --- | --- |
| | Mean (SD) | | |
| Gender | | | |
| Female | 16.92 (5.75) | 0.150 | (-3.19-1.04) |
| Male | 15.85 (5.22) | | |
| Marital status | | | |
| With partner | 16.10 (5.35) | 0.988 | (-1.38-2.82) |
| No partner | 16.83 (5.72) | | |
| Education (years) | | | |
| 8 or fewer | 20.52 (8.51) | 0.009* | (0.26-9.17) |
| Over 8 | 15.80 (4.54) | | |
| Occupational status | | | |
| Active | 14.79 (3.38) | 0.000* | (-8.33 to -3.01) |
| Inactive | 20.47 (7.36) | | |
| Perceived health status | | | |
| Very poor/poor/fair | 21.61 (7.61) | 0.000* | (-9.79 to -3.47) |
| Good/very good | 14.97 (3.57) | | |
| Alcohol consumption | | | |
| Yes | 13.33 (1.15) | 0.154 | (-9.73-3.16) |
| No | 16.62 (5.61) | | |
| Physical activity | | | |
| Yes | 16.05 (4.38) | 0.114 | (-1.32-2.70) |
| No | 16.75 (6.04) | | |
| Smoking | | | |
| Yes | 17.06 (6.50) | 0.196 | (-3.16-1.36) |
| No | 16.16 (4.83) | | |

SD = standard deviation; 95%CI = 95% confidence interval.
* Mann-Whitney *U* test significant at 0.01.

PHC users, over 95% of participants reported difficulties in at least one of the items for which impairments were observed in this study.[28] A household survey revealed that the most common functional limitations were associated with mobility, and included fatigue, difficulty walking and moving the upper limbs; as well as emotional factors such as depression and anxiety.[17] In another nationwide study, individuals younger than 60 years reported more functional disability in the pain and mobility domains, followed by work, eutrophy, and general tasks and demands.[7]

In addition to limitations in everyday activities and restricted social participation, emotional alterations were reported by 30% of participants in this study, demonstrating that variables other than the presence of an illness, such as well-being and satisfaction, can also interfere with the assessment of disability.[18] This finding illustrates the interaction between social and psychological factors and disability, where emotional aspects account for a significant portion of the functional disability experienced by workers. The role of emotional variables in disability supports the idea of human functioning as a multifactorial construct.

Given that disability levels on the WHODAS 2.0 were predominantly low, it may be especially important to address occupational functioning in PHC settings, where interventions could be implemented to prevent further disability and promote better functioning.[29] However, these assessments are rarely performed in PHC, despite their ability to provide information on patient health and influence everyday life.[30] Identifying demands based on patient needs can help with the planning of PHC initiatives and the development of patient-centered interventions. However, the identification of functional impairment remains a challenge for PHC teams who have difficulty assessing the health care needs of the population and developing strategies to address these issues.[29]

The use of a quick and easily trainable tool such as the WHODAS 2.0 could help PHC workers identify domains of functioning that pose the greatest problems to the population, and should be prioritized by NASF-AB. The findings obtained using the WHODAS 2.0 demonstrated that patients should be evaluated and, if necessary, treated by different health professionals, such as psychologists, occupational therapists, physical therapists, nutritionists, and speech therapists, depending on the nature of their functional impairment.[7] Professionals from different areas of health care should be involved in PHC initiatives that involve the development of early multidisciplinary interventions to prevent and reduce disability in this population.

Occupational health is still insufficiently discussed in PHC, and the initiatives that address this issue are narrowly focused, fragmented, and may not reflect the needs of workers. Health promotion, prevention, and education initiatives must be developed to meet the needs of this population. One way to encourage this approach would be to include a measure of functioning in the initial assessment of patients in PHC and the strengthening of occupational health initiatives in the SUS.[31] Therefore, the inclusion of multi-professional and interdisciplinary teams in the NASF-AB would improve the services offered to the population and allow for a more comprehensive approach to health, which could address issues such as functioning.

Some limitations of this study should be noted, such as the impossibility of drawing causal inferences from cross-sectional data. Longitudinal studies are still required to monitor changes in functioning among workers, especially those in older age groups. Our findings on inactive workers are also relevant and point to the need to explore the association of inability to occupational status. Consequently, these results may contribute to the development of more specific treatment strategies for specific subgroups of patients. The use of convenience sampling may limit the generalization of our findings to other populations and could have caused bias in sample characteristics. Nevertheless, the characteristics of participants in the present study are similar to those of Brazilians treated in PHC, especially in terms of education, age, and gender.

## CONCLUSIONS

This study evaluated the functional difficulties of workers seen in PHC with regard to activities and participation. Participants reported difficulties related

to emotional alterations; participation in leisure activities; housework and work; standing up, learning new tasks, and dealing with strangers. For most participants, these difficulties were rated as mild to moderate. These results indicate that functioning should be addressed in early assessment and interventions in PHC by teams involving psychologists, occupational therapists, physical therapists, nutritionists, and speech pathologists. We hope that this information contributes to the systematic implementation of functional assessments with instruments such as the WHODAS 2.0 to collect information on patients and identify relevant functional needs, screen for risk factors, and help structure health care services according to the ICF model.

Low education, time away from work, and poor perceived health were associated with greater functional impairment. Therefore, PHC services should consider sociodemographic data and perceived health when planning and developing strategies to prevent disability in workers. Additionally, the present findings reveal the need to strengthen multidisciplinary teams in the NASF-AB to meet the demands of workers seen by primary care.

## ACKNOWLEDGMENTS

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