# A qualitative approach of interactions between the domains of the International Classification of Functionality, Disability, and Health

## *Uma abordagem qualitativa das interações entre os domínios da Classificação Internacional de Funcionalidade, Incapacidade e Saúde*

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## ABSTRACT

The International Classification of Functionality, Disability, and Health (ICF) is based on the bio-psycho-social model and enables understanding of the processes of functionality and disability through the interaction of its components. The aim of this study was to analyze the interrelationships between the domains of the ICF, describing the process of functionality and disability from the perspective of the individual. A qualitative approach was used with interviews and a life grid, built out of ICF domains, applied to 11 patients, and followed by filling in a diary of weekly activities. Most respondents made use of products and technologies such as canes, prostheses, or orthoses, and they had no difficulty in acquiring them through the SUS system. Personal factors that stood out were the ways of coping with new health conditions and new meaning in their lives. During the interviews, the importance of social support, particularly that offered by family and friends, the barriers encountered in the use of public transport, in addition to access of health care and Social Security benefits were prominent. Developing day-to-day strategies was a topic that showed how respondents reorganized their lives to minimize the difficulties they experienced. The data analysis from the interviews confirmed the existence of interaction between the components of ICF. This model was shown to be an important tool for understanding the process of human functionality and disability from the standpoint of the patient's subjectivity and individuality, as well as for developing interventions and guiding public policy and health research.

**Keywords:** International Classification of Functioning, Disability and Health, Disabled Persons, Social Support, Health Public Policy

## RESUMO

*A Classificação Internacional de Funcionalidade, Incapacidade e Saúde (CIF) baseia-se no modelo biopsicossocial e permite a compreensão dos processos de funcionalidade e incapacidade através da interação dos seus componentes. O objetivo deste estudo foi analisar as inter-relações entre os domínios da CIF, descrevendo o processo de funcionalidade e de incapacidade a partir da percepção do indivíduo. Utilizou-se abordagem qualitativa com realização de entrevistas e de grade de vida, construídas a partir dos domínios da CIF, aplicadas a 11 pacientes, seguida por preenchimento de um diário de atividades semanais. A maioria dos entrevistados fez ou faz uso de produtos e tecnologias como bengalas, prótese ou órteses, e não teve dificuldade na aquisição dos mesmos através do SUS. Os fatores pessoais que se destacaram foram as formas de enfrentamento da nova condição de saúde e a ressignificação de suas vidas. Durante as entrevistas, a importância do suporte social, sobretudo aquele oferecido pelos familiares e amigos, as barreiras encontradas na utilização do transporte público, além do acesso aos serviços de saúde e benefícios da Previdência Social foram ressaltados. A elaboração de estratégias foi um tema que aponta para a reorganização do cotidiano e que os entrevistados desenvolveram para minimizar as dificuldades vivenciadas em seu dia-a-dia. A análise das entrevistas permitiu confirmar a existência de interação entre os componentes da CIF. Este modelo mostrou-se uma ferramenta importante para compreender o processo de funcionalidade e incapacidade humana a partir da subjetividade e individualidade do paciente, bem como para elaborar intervenções e nortear políticas públicas e pesquisas na área de saúde.*

***Palavras-chave:*** *Classificação Internacional de Funcionalidade, Incapacidade e Saúde, Pessoas com Deficiência, Apoio Social, Políticas Públicas de Saúde*

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Doi: 10.11606/issn.2317-0190.v17i3a103331

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« Recebido em 30 de Julho de 2010, aceito em 08 de Agosto de 2010 »

## INTRODUCTION

The *Pesquisa Nacional de Amostras por Domicílio* (National Home Sampling Research) (*PNAD*), made by the *Instituto Brasileiro de Geografia e Estatística* (Brazilian Institute of Geography and Statistics) *(IBGE)* in 2003, estimated that 29.2% of the Brazilian population had been diagnosed with a chronic disease such as diabetes, hypertension, rheumatism, cardiopathy, and spinal problems, among other things.[1] Many of these illnesses demand continuous services and increasing onus as a direct result of the aging of the individuals.[2] Functional disability is cited as the most important negative consequence and is influenced by health conditions as well as psychological and social factors.[3] According to Almeida et al[4] and based on the 1998 NHSR data, the incidence of chronic diseases is associated with a bad evaluation of the state of health and a restriction of daily activities.

Getting information about the life of patients after a diagnosis of a chronic illness and/or accident is becoming increasingly important since the causes of death and the incidence of diseases are known, in an age when life expectancy is increasing and technology helps prolong human life might not be enough for planning the actions of the health sector.[5] Hence the analysis and discussions about human functionality and disability might help in the conception of more specific health indicators directed toward the consequence of the diseases as well as in the preparation of more effective public policies.[6]

In the midst of these debates, in 2001, the World Health Organization (WHO) published the International Classification of Functionality, Disability, and Health (ICF) which constitutes a model of functionality and disability and a system of classification. The proposed model is based on a combination of medical and social models, and for this a bio-psycho-social approach is used seeking to integrate the various dimensions of health (biological, individual, and social).[7]

The ICF classifies health components, organizing them in two parts: the first refers to Functionality and Disability and includes the components Body Functions and Structures, Activities, and Participation, and the second refers to Contextual Factors whose components are Personal (internal to the individual) and Environmental (external factors) which can act either as facilitators or barriers. Functionality is the result of the interaction between the health condition shown by the individual and the factors of context.[7] Each one of these domains acts and suffers the actions of the others[5] since these interactions are specific, but do not always occur in a predictable and linear form.[7]

Studies point out that the experience of infirmity can be understood as the way individuals face a disease and a functional deficit or take on a situation and give it meaning, developing routine, daily ways of dealing with it. The responses to the problems created by the disease/disability take on a social power and lead directly to a world divided between practices, beliefs, and values.[8]

For Ueda & Okawa,[9] the subjective nature of functionality and disability brings into account the cognitive, emotional, and motivational states of an individual. This is why the experience of disability is not simply the passive response of the patient to his health and environment conditions, but an array of active reactions based on personality and on psycho-social factors such as his value system, self-image, ideas, purpose in life, and previous experiences with coping with things. In this context, the subjectivity of the experience of limited functionality and disability is a dimension independent of function and dysfunction and can help us understand the individual as a person.[6]

Few studies have explored the perceptions of the subject concerning his functionality and how his intrinsic factors interact with the social environment to produce the disability. The objective of this study was to analyze the inter-relations between the different domains of the ICF, describing the processes of functionality and of disability from the perspective of the individuals, all according to the bio-psycho-social model proposed by the WHO and based on the understanding that the experience of the process of growing ill and that of becoming disabled are essentially separate and context-dependent.

## METHOD

The present study was developed into a qualitative approach whose methods are capable of making new aspects emerge, of going deeply into the meaning, and of revealing the perspective of the patient, which all facilitates the explanation of meanings and the discovery of relationships. This information frequently emerges during research and can involve variables, motivations, and behavior in a completely unexpected way.[10]

For this study, 11 patients of both sexes were selected from the *Hospital Maria Amélia Lins da Fundação Hospitalar de Minas Gerais* - Maria Amélia Lins Hospital of the Hospital Foundation of Minas Gerais *(HMAL – FHEMIG)*; their ages ranged from 18 to 60 years and they were in diverse states of health such as having hand trauma, strokes, low back pain, and rheumatoid arthritis, among other things. They were selected deliberately since, in the qualitative approach of the research, the composition of the group seeks to involve the main social actors that live in the phenomenon of interest in the study.[11]

Data collection ceases according to the criterion of saturation, understood as when the data is sufficiently confirmed, the appearance of new data becomes increasingly rare, and the researcher comes to understand the internal logic of the group or collectivity under study.[12]

The procedures of this study included two moments: one of filling in a questionnaire for collecting social and demographic information, and the other in applying the techniques of the life grid, a semi-structured interview combined with a weekly diary.

The life grid is a method of obtaining information on the life trajectory of participants, permitting the creation of a chronological diagram and the incorporation of the experience of illness in the participant's life story. In practice the life grid is a table with rows representing time and columns for the various areas of life.[13] In this study the rows represent three phases of the participants' lives: one year before the illness/accident, right after release from the hospital, and currently–– which corresponds to a period more than three months post hospital release. The columns represent the different ICF domains grouped into one column so as to facilitate the understanding and preparation of responses (Table 1). The reason for choosing this technique was to analyze how each participant sees their life and the relationship with their state of health–– in other words, what impact the pathology/accident has on different areas of their life.

Filling in the grid was done by researchers based on information collected via a semi-structured interview directed by a list of questions. According to Haguette,[14] the interview can be defined as a process of interaction between two persons, one of which, the interviewer, seeks to obtain information from the other, the interviewee. The semi-structured interview is one that is made in accordance with a script that serves as a guide for the process of the interlocution.[12] It combines closed

**Table 1** – Life Grid.

| | Corporeal Structure and Function | Learning and Application of Knowledge | Domestic Life* | Communication | Mobility | Personal Care |
|---|---|---|---|---|---|---|
| One Year Earlier | | | | | | |
| After Hospital Release | | | | | | |
| Currently | | | | | | |

* Domestic Life = Tasks and General Demands + Domestic Life

| | Education | Economic Life** | Social Life *** | Attitudes | Use of Products and Technologies | Environment and its Alterations | Beneficial Services and Policies |
|---|---|---|---|---|---|---|---|
| One Year Earlier | | | | | | | |
| After Hospital Release | | | | | | | |
| Currently | | | | | | | |

** Economic Life = Work and Employment + Economic Life
*** Social Life = Interactions and Interpersonal Relationships + Support and Relationships + Social Life

and open questions in which the interviewer has the possibility of adapting the theme of the question and not be trapped within a formulated inquiry.[15]

The interviews were recorded on a Sony model ICD-P620 recorder with permission from the participants. The recordings were used as reference material to clarify any doubts in filling in the life grid after the end of the interview. At the end of all this, the participants received a journal into which they were to write their daily activities for one week. The purpose of this journal was to identify the facilitators and the barriers encountered during their daily tasks. After one week the journal was collected and any doubts about its entries were clarified.

Analysis of the data was made based on thematic units or themes, which can be understood as "units of significance naturally liberated from a text analyzed following criteria related to the theory that serves to guide the reading".[16] The steps for analyzing the data, according to Bardin,[16] were pre-analysis, exploration of material, and treatment and interpretation of data obtained.

Pre-analysis involved a deep reading to establish contact with the interviews and to get to know the text better, allowing the impressions and orientations to be digested. In this process the raw material was organized into thematic units, going back to the original research objectives.[16] These thematic units followed the previous organization of the life grids. In the material exploration step, the thematic units selected in the first phase were categorized in diagrams according to ICF domains.

The treatment and interpretation of the categories and diagrams obtained, the last step proposed by Bardin[16] for qualitatively analyzing the data, supplied schematic representations (diagrams) that are useful to visualize the interaction of the various components involved in the process of disability. In this step something prominent was sought within the ICF categories, other aspects that merited discussion such as the strategies developed by the patients. It was also in this step that inferences and interpretations were proposed. To establish the discussion of the results, bibliographical information was used that was researched in the literature.

All the participants were informed about the objectives and procedures for collecting data, and those that voluntarily agreed to participate in the research signed the free and clear consent form. This study, as well as the free and clear consent terms were approved by the *Comitê de Ética em Pesquisa da Universidade Federal de Minas Gerais* (Ethics in Research Committee from the Federal University of Minas Gerais) and by the *Comitê de Ética do HMAL/FHEMIG* (Ethics Committee from the HMAL/FHEMIG), Legal Opinion numbers 132/09 and 153B-2009/10, respectively, in fulfillment of the ethical precepts demanded.

## RESULTS

Eleven patients participated in this study, relating their perceptions of health and functionality and also describing the processes of disability at various stages of their lives. Of these participants, five were men and six were woman. As to their marital status, five were married (5), three were single, two were separated or divorced, and one was widowed. The age of the group ranged from 40 to 59 (SD = 6.17). Their education level (measured in years of schooling) varied between one and eleven with an average of 6.9 years of study (SD = 3.85). Their family income ranged between R$510 and R$1,500 per month with an average of R$853.81 (SD = 382.86).

As to their professions before their accident or onset of their illness, various occupations were identified. Two participants were housemaids, there was one commercial representative, one industrial mechanic, one bricklayer, one bus conductor, one day-laborer, one seamstress, one kitchen helper, and one driver. One of the participants was a housewife and had no paying job. As to their current work situations, the majority (six patients) had stopped working owing to their health condition, four subjects were actively working, and one had retired owing to his health condition. The group interviewed showed diverse health conditions, including orthopedic and neurological conditions such as leg amputation, amputated

**Table 1 –** Clinical and socio-demographical characterization of the participants in the study. Belo Horizonte, 2010.

| Interview | Sex* | Age | Years of study | Occupation | Income (R$) | Health Condition | Marital Status | Work Situation | Smoker | Physically Active |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M | 55 | 4 | Commercial representative | 600 | Leg amputated | Single | Off work | No | No |
| 2 | M | 43 | 11 | Industrial mechanic | 1412 | Fingers amputated | Married | Off work | No | No |
| 3 | M | 59 | 2 | Brick-layer | 1600 | MMSS tendon and nerve injuries** | Married | Off work | No | No |
| 4 | F | 47 | 1 | Housewife | 1020 | Facial and peripheral paralysis | Married | Active | No | No |
| 5 | M | 43 | 8 | Bus conductor | 800 | MMSS tendon and nerve injuries** | Separated / Divorced | Off work | No | No |
| 6 | F | 55 | 5 | Day Laborer | 510 | Stroke*** | Single | Retired | No | Yes |
| 7 | F | 51 | 8 | Seamstress | 1020 | Low back pain | Married | Active | No | No |
| 8 | F | 40 | 11 | Housemaid | 510 | Polytraumatism | Separated / Divorced | Off work | No | Yes |
| 9 | F | 55 | 11 | Kitchen helper | 900 | Low back pain | Widowed | Active | No | No |
| 10 | F | 47 | 4 | Housemaid | 510 | Epicondolitis | Married | Active | No | No |
| 11 | M | 46 | 11 | Driver | 510 | Hip fracture | Single | Off work | Yes | No |

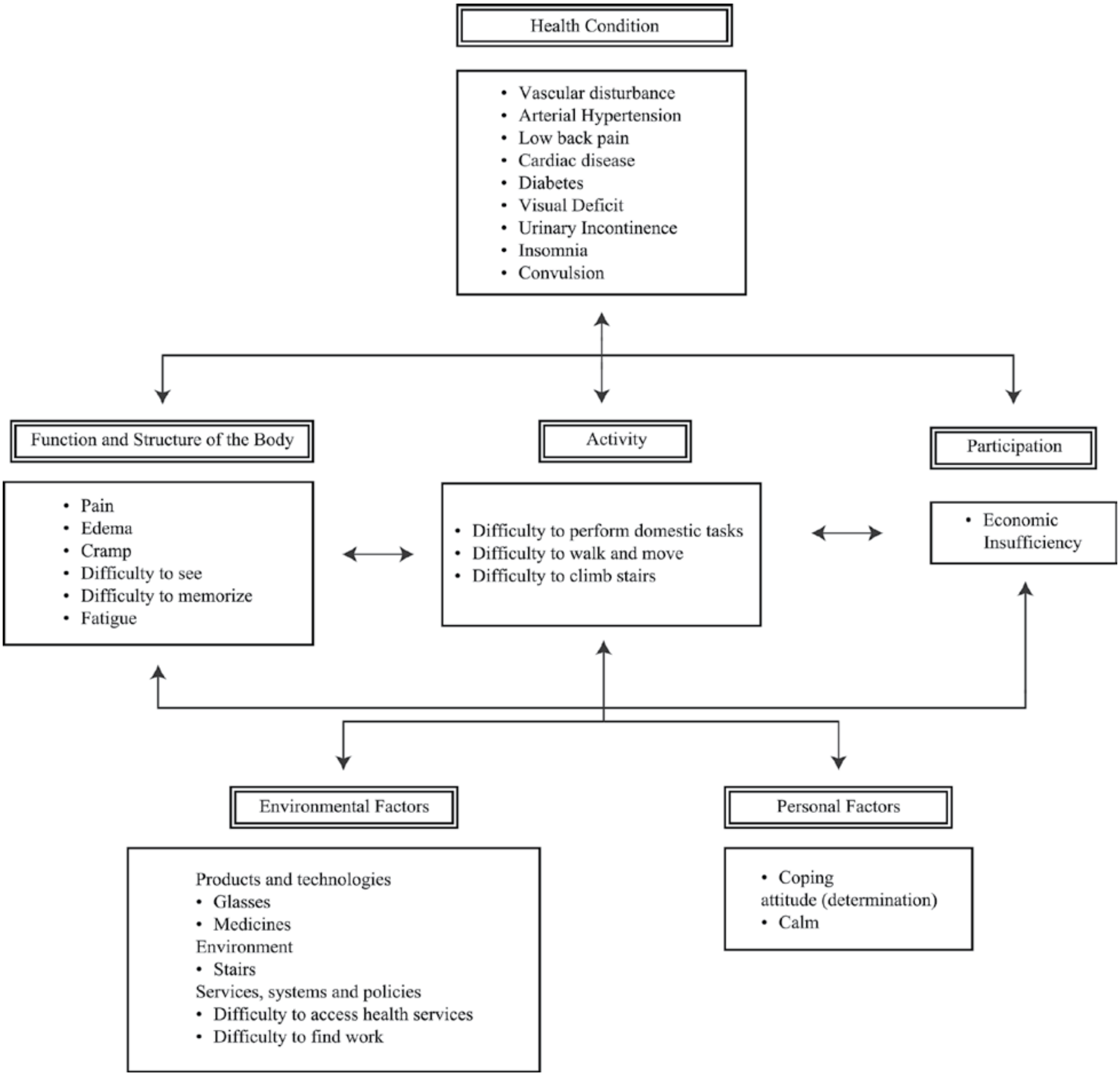
* M = masculine; F = feminine.
** MMSS = Upper members.
*** AVE – Stroke.

fingers, tendinous and nervous injuries of the upper limb, stroke, low-back pain, poly-traumatism, epicondilitis, and hip fracture. As to current living habits of the participants, one was a habitual smoker and two practiced regular physical activity. All this data is described in detail in Table 1.

The interviews generated 6 hours and 32 minutes of recordings, lasting an average of 35 minutes, and whose contents were transcribed and edited according to the structure of the life grids. The information concerning deficiencies, limitations, and restrictions in the life of the patient were organized into three diagrams which, based on the ICF diagram,[7] show the possible interactions between the components of the bio-psycho-social model. These three diagrams represent the disability processes as analyzed according to the three phases in the patient's life, namely: the phase prior to the onset of the illness/accident (1 year), the acute phase of the illness/accident (up to 3 months), and the current phase – which varies between 1 and 29 months, averaging 11.54 months (SD = 9.25).

The first diagram (Figure 1) shows the patients' processes of functionality and disability before the onset of the illness or accident. One can see that the participants already showed various health conditions one year before the illnesses/accidents considered in this study. Arterial hypertension, low back pain, and poor eyesight were the most common previous health conditions among those interviewed. When analyzed, these health conditions are brought into consideration by contextual factors that generate deficiencies in the structures and functions of the body such as back or limb pain and impaired vision. This negative impact on the structures and functions of the body may be due to environmental barriers the patients have to face, such as too many stairs to climb and difficult access to the public health services. In counterpart, the patients report few limitations of activities, mainly in their mobility and completion of domestic tasks, and no restriction in social participation stemming from these conditions. This low impact on their activities and participation suggests that helpful contextual strategies and factors such as access to eyeglasses, medicines, and positive strategies for confronting their illness might diminish the negative impact of a negative health condition on the functionality of the patients.

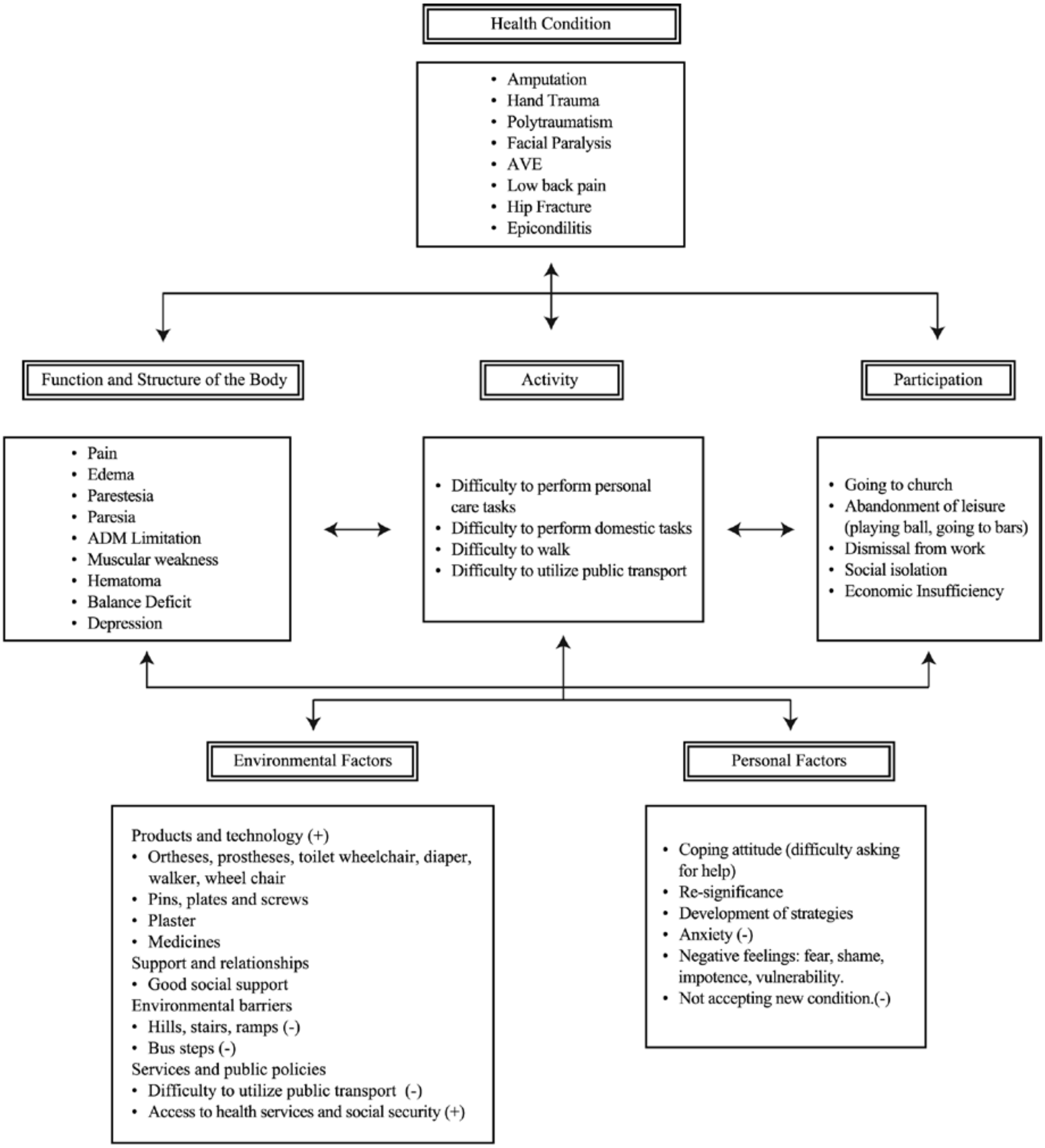
In the diagram concerning the acute phase (Figure 2), one sees the following health conditions: amputations of lower limbs and fingers (MMII), hand traumas, polytraumatism, facial paralysis, stroke, low back pain, hip fracture, and epicondilitis. On interacting with contextual factors, these health conditions had an impact on the bodily structures and functions of those interviewed such as: pain, edema, paresthesia, paresia, limitation in range of movement (ADM), muscle weakness, bruising, and depression. Those participating in the research reported various limitations in activities, mostly concerning personal care, domestic chores, and mobility. In addition, the reports indicated significant restrictions in the patients' participation such as abandonment of leisure activities, time off work, and social isolation. Contextual factors play an important role in the interaction between the analyzed domains. As for environmental factors, the majority of the participants had good social support and had access to the health services and benefits of Social Security. Technological products such as prostheses, orthoses, wheel chairs, and medicines were other helpful environmental factors cited in the process of functionality. Yet, in relation to environmental factors, some of the interviewees pointed to public transportation as an environmental barrier, especially related to their participation in social situations. In analyzing the personal factors, what stood out in the interviews was the participants' own development of strategies to face and find new meaning in life.



Source: Figure adapted from PAHO and WHO, 2003.[7]

**Figure 1 –** Diagram refers to patients' disability in the phase prior to their illness/accident. Belo Horizonte, 2010.

In the diagram referring to the current phase of life (Figure 3) the impairments are still shown from the previous phase such as pain, ADM limitation, and muscular weakness, aside from the limitations of activities, mainly in terms of personal care, domestic chores, and mobility. Participatory restrictions, especially in the main areas of life such as work and leisure and in the community and social life, have negative impacts on the health and functionality of the patients. The importance of social support is often spoken of by the interviewees and emphasized among the facilitators of the process of functionality. Financial assistance and care from friends and family are interpreted as factors that minimize impairments and facilitate completion of activities and social participation. Access to health services and benefits of Social Security by the majority of those interviewed, plus the possibility of acquiring orthoses, prostheses, wheelchairs, walkers, and bathing chairs emphasize the services, policies, products, and technologies as important aids in the process of functionality. Important environmental barriers are treacherous terrain and ramps and specific difficulty with public transportation as reported by the majority of interviewees. As for personal factors, the ability to develop strategies for facing and finding new meanings is again present and was pointed out as important in dealing with new situations in life. In their reports, the participants highlighted the difficulties that arise and the disruptions that their health conditions impose on their daily routine. They pointed out strategies that needed to be developed, adaptations to their tasks, and later, spoke about new arrangements and organizations in their lives.



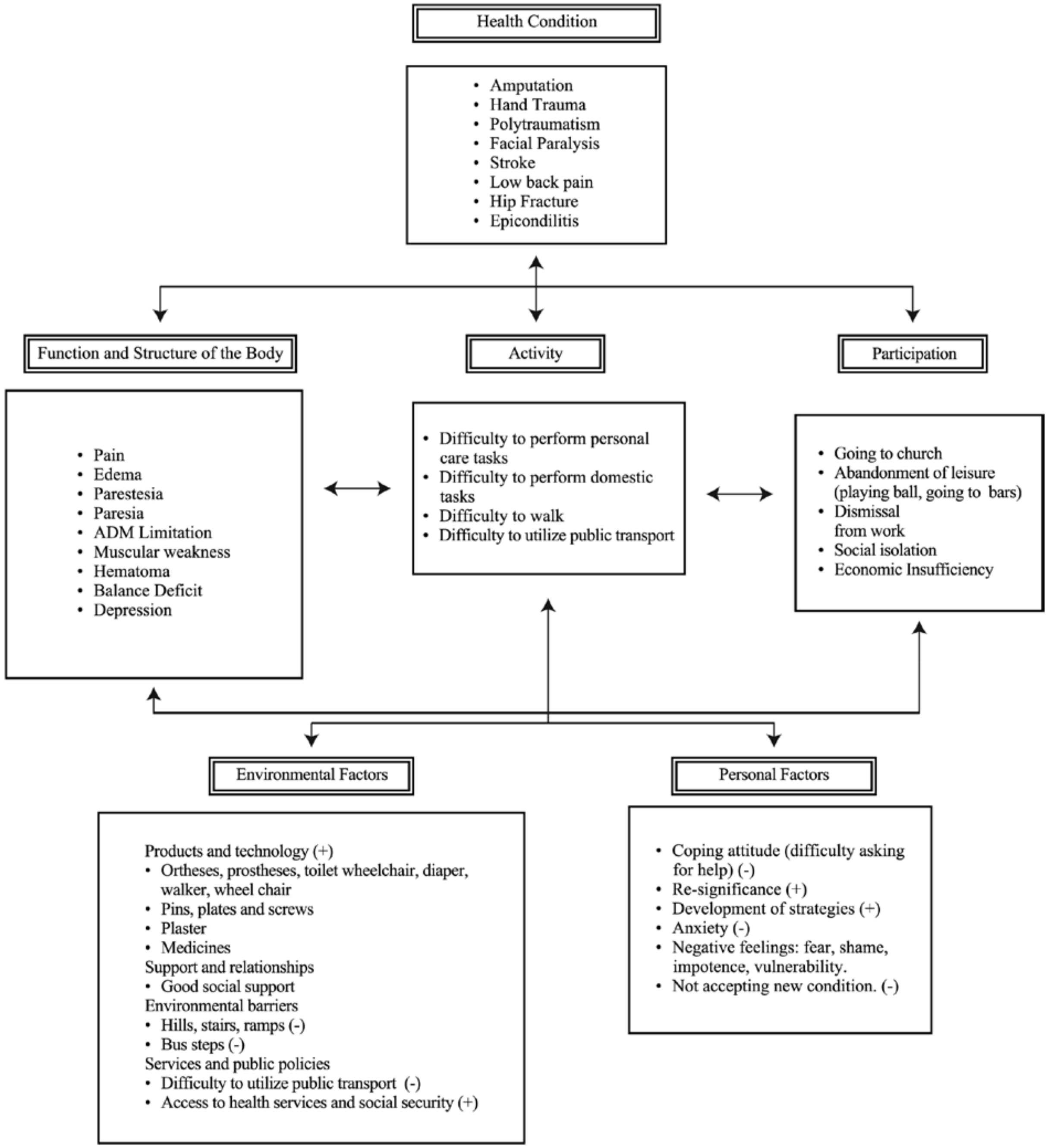
Source: Figure adapted from PAHO and WHO, 2003.[7]

**Figure 2 –** Diagram referring to patients' disability in the post-hospital phase. Belo Horizonte, 2010.

## DISCUSSION

Functionality has been an oft-discussed theme in the literature in recent years in spite of the lack of studies approaching the question from the subject's point of view. According to the ICF the experience of falling ill is essentially an individual one and dependant on context,[7] however this model has been criticized for exploring the subjective dimension of disability superficially.[9] The personal and social resources of which someone avails himself are a way of determining the implications of functional disability, which is why it becomes relevant to evaluate not only the functional decline, but how each one deals with such limitations.[17]

The occurrence of different events in life such as the appearance of new health conditions can distinctly impact one's behavior over the years. This process must be analyzed on a time line in order to comprehend the disruption in the course of a person's life. This is why the present study used the life grid as a method to explore the associations between the accidents and illnesses and the onset of impairments in the ICF domains in the three phases of the participants' lives. This method facilitated the retrieval of memories, the reflection and reconstruction of the subjects'



Source: Figure adapted from PAHO and WHO, 2003.[7]

**Figure 3 –** Diagram referring to patients' disabilities in the current phase of their lives. Belo Horizonte, 2010.

biographies, as referred to by Perry et al.[13] In Brazil there is a scarcity of studies that use the life grid, however research done in other countries[13,18-20] has obtained deep and detailed data by using this method.

On analyzing the interrelations between the functionality components proposed by the ICF based on the perceptions of the interviewees, one can see that, in spite of having distinct health conditions, they show functional deficits and developed similar strategies. This fact reinforces the findings of other authors in which the same disease, diagnosed in different individuals, does not have the same impact on functionality and is not restricted to the same domain of bodily structure and function, which is to say that activities and social participation may also be impacted.[7,21,22] Health conditions, however relevant as far as defining therapy, must not be the only orientation for treatment used by rehabilitation professionals.[23] A broad, up-to-date evaluation must focus on the individual and must bring into consideration all dimensions of health with the same degree of importance, including the patient's activities, social participation, and contextual factors.

In the present study, various subjects pointed out their social support as a facilitator in the process of functionality, especially the help from friends and family, which minimized their disabilities and allowed them to carry out more of their activities in addition to enabling their social participation. This finding is corroborated in data from the literature in which individuals with better social support showed better health and physical and psychological performance in addition to improving their adherence to the treatment.[24-26] Social support has also been considered a facilitating factor in an individual's confronting and recuperating from chronic illnesses[27] and a key element in his well-being and health maintenance.[28] Increased social support is even associated with lower levels of stress, depression, and functional disability, and with a greater capacity to face life.[27,29]

The involvement of others in the care and support for handling the negative consequences of an illness or accident seems to favor the patient's adaptation and adjustment to his new health condition.[26] In the current phase of life for patients in this study their development of strategies to minimize mobility problems, personal care tasks, and domestic duties is evident, which highlights their capacity to deal with adverse situations and new demands. These strategies are to reconstruct or reorganize daily life to be like it was before[30] and they are influenced by established social contacts, by the nature of the symptoms, and by the perceptions of those around them and the way they look at them.[31] These strategies consist of actions and attitudes that the individuals develop to maximize the positive results and to minimize the negative effects of their health condition. They refer not only to the ability of the person to manipulate the environment or minimize the impact of the illness, but also to the attempt to mobilize resources to improve and establish realistic goals for maintaining daily life.[30]

Various strategies were developed by the subjects to face the difficulties of using public transportation, which seems to be the main environmental barrier. They emerged in the attempt to solve this problem, but in some cases the need for assistance was inevitable. Social policies in the ambit of public transportation have traditionally been centered around questions of safety and access for the disabled. With the introduction of the concept of social inclusion, the debate on questions of access and the importance of the need for social inclusion was broadened. However, the social objectives of transportation are not sufficiently understood and are still poorly defined,[32] which all the more points out the importance of discussing the questions involving planning and the implementation of public policies in the area of mass transit.

On the other hand, access to health services has been an environmental factor that acted as a facilitator of functionality. The interviewees had no difficulties accessing the services, products, and technologies of the *Sistema Único de Saúde (SUS)* (Public Health System), which corroborates Article 196 of the Federal Constitution,[33] which instituted health as the right of everyone and a duty of the State. Noticeable in this study was some effectiveness of the social, economic, and health policies that seek to reduce the risk of illnesses and of other injuries and the universal and equal access to actions and services for promotion, protection, and recovery of health.[33] It must be pointed out that some participants reported a slowness in the service, which could be justified by the great demand by the users in search of health services.

The health area, just like that of education, Social Security, statistics, and public policies, can benefit from using the ICF for it contains a series of tools, makes various approaches possible, and can be applied in clinical practice, teaching, and research.[5] Using the ICF in clinical practice and in research allows one to analyze all the components involved in the process of human functionality and disability, which encourages broad therapeutic approaches centered on the patient.[23] In addition, the ICF can orient public policies directed towards people with deficiencies,[6] address important questions of Public Health as to the most suitable needs and types of interventions for reducing secondary conditions, and promote the health of people with deficiencies[5] and the influence of environmental factors in the process of functionality, among other things.

Based on the reports of the subjects in this study, it is possible to see the interactions between the health components proposed by the ICF and point out the important use of this model from the individual's perspective for a broader description of the process of human functionality and disability.

## ACKNOWLEDGEMENTS

This study received financial support from the *Fundação de Amparo à Pesquisa de Minas Gerais (FAPEMIG)* (the Research Support Foundation of Minas Gerais (FAPEMIG)) and from the *Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)* the National Council for Scientific and Technological Development (CNPq).

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