



COGNIC - A Mobile Device Application Used for Cognitive Stimulation in Older People with Dementia*

COGNIC - Um Aplicativo para Dispositivo Móvel Usado na Estimulação Cognitiva de Idosos com Demência

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Resumo

A demência é uma doença mental prevalente entre idosos e é caracterizada por déficit cognitivo acentuado. A doença de Alzheimer é a demência mais frequente e afeta a memória e outras funções cognitivas dos indivíduos. Ainda não há cura para a doença, porém, existem tratamentos que podem aliviar os sintomas cognitivos e controlar os comportamentos dos pacientes. O uso de aplicativos para *smartphones e tablets* para o tratamento não-farmacológico das demências, em geral, vem aumentando progressivamente nos últimos anos. Este artigo apresenta o desenvolvimento de um aplicativo para dispositivos móveis com base na plataforma Android®, a partir de diretrizes estabelecidas na literatura, a ser utilizado com acompanhamento de profissionais de saúde, durante o atendimento de idosos com diagnósticos de demência leve a moderada devido ao Alzheimer. Foram feitos testes de usabilidade e aplicados questionários, sendo que os resultados da avaliação indicaram que o aplicativo atendeu aos objetivos propostos, validando as diretrizes estabelecidas para o seu desenvolvimento a partir da literatura.

Palavras-chave: Doença de Alzheimer. Demência. Estimulação cognitiva. Aplicativo. Dispositivo móvel.

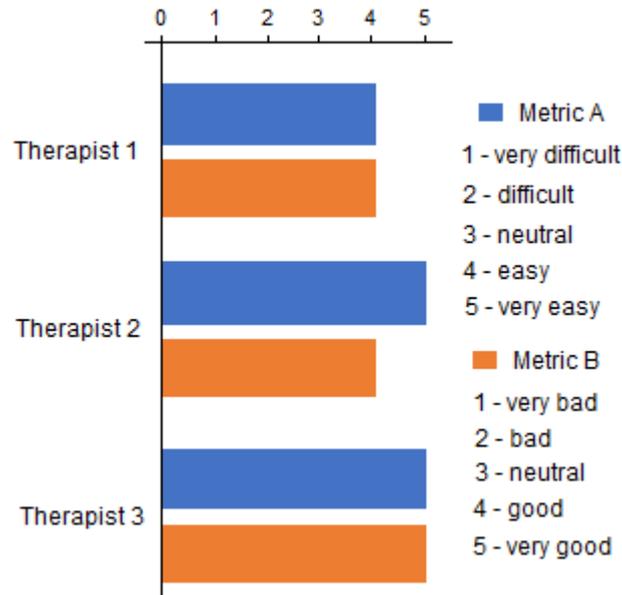
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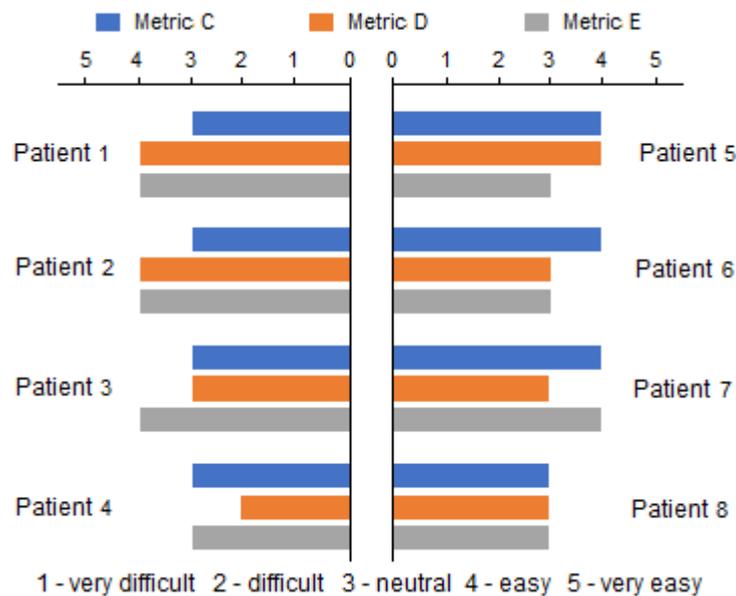
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Figure 8 – Metrics related to evaluation of Occupational Therapists



Source: Authors.

Figure 9 – Metrics related to evaluation of Patients



Source: Authors.

For metric C (interactions with the different interface objects), 62% of patients rated the application reasonable and 38% rated it easy. For metric D (understanding of the instructions explained by the health professional), 50% of the patients rated it reasonable, 38% rated it easy and 12% rated it difficult. For metric E (difficulty in completing tasks), 50% of the patients rated it reasonable and 50% rated it easy.

As positive points of the application, the occupational therapists listed the fact that the theme used (shopping for groceries) is a common activity performed by individuals, but its use in the application was considered a novelty by the participating older people. This facilitated

the acceptance of the application and stimulated it for use in general. The therapists also stated that the application presents images that are easily identifiable and the activity involves simple commands. The therapists stated that the application addresses attention, semantic and episodic memory, and aspects of executive function, such as categorization, logical reasoning, and calculation. As a negative point, the therapists indicated the need to use the application with the monitoring of an occupational therapist due to the patient's learning difficulty as a result of his/her health condition as well as difficulty in using the technology itself due to a low level of schooling in some cases or difficulty handling a smartphone. The occupational therapists suggested that the application could be developed further, expanding its scope of activities of daily living and the offering more levels of difficulty. They suggested improvements in the figures in terms of their recognition and scale. For example, the refrigerator and medicine cabinet are easily recognized, but should be presented more in scale, meaning that the refrigerator should appear larger than the medicine cabinet. They also suggested that the steps could be more flexible. For example, once the selection phase of the products on the shopping list has been completed, it would be possible to go directly to the home and move on to the storage phase without necessarily having to carry out the stage of paying for the purchases. This would make the application more adaptable to the condition of each patient. The occupational therapists also stated that the application would be more useful for patients in the early stage of dementia with good cognitive reserve, for whom the stimuli would have more positive responses. They also thought that the application would have greater acceptance among older people who have an interest in current affairs, news, and new experiences. In the collecting the impressions about the application made by occupational therapists, the patients indicated that they were generally interested and even surprised by the proposed activity due to its theme (purchases). They showed a willingness to learn and use the application and said that they enjoyed doing the activity. Some reported difficulty in storing the products from the shopping list, indicating that, while they recognized the products and places to store them, their home differs from that in the application. They also demonstrated difficulties with the technology itself and the touch screen interface.

5 CONCLUSION

The results of the usability testing and the considerations offered by the occupational therapists and patients revealed that the application had an overall positive evaluation. Thus, the application reached its objective of being useful for older people with mild to moderate dementia and validated the guidelines established in the literature for the development of applications for this population. Compared to other applications cited in the literature review, the application developed in this study also enables cognitive stimulation through a simulated activity of daily living with a universal nature but should be used with the accompaniment of a healthcare provider on an individual basis. It offers a patient-adapted interface with instructions displayed in the "pencil and paper" format (presented from top to bottom as on a sheet of paper). The application also has an academic aspect and can be included in research protocols related to public health. For future versions, the application could be developed further, expanding its scope of activities of daily living and adding more levels of difficulty by increasing the number of items to be purchased, stored, or saved. The application could be made more adaptable to the condition of each patient through greater flexibility in choosing the order of execution of the phases. Finally, learning strategies should be developed to assist patients regarding how to use the application and handle smartphones in order to enable more autonomous use of the application without the need for the monitoring of an occupational therapist, at least in cases of milder dementia.

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