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Short Communication

Perceptions of Compensation Strategies for Gait Impairments in Parkinson's Disease: A Survey Among 320 Healthcare Professionals

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Abstract. Compensation strategies are an essential part of managing gait impairments in people with Parkinson's disease (PD). We conducted an online survey among 320 healthcare professionals with specific expertise in PD management, to evaluate their knowledge of compensation strategies for gait impairments in people with PD, and whether they applied these in daily practice. Only 35% of professionals was aware of all categories of compensation strategies. Importantly, just 23% actually applied all seven available categories of strategies when treating people with PD in clinical practice. We discuss the clinical implications, and provide recommendations to overcome this knowledge gap.

Keywords: Parkinson's disease, rehabilitation, compensation strategies, healthcare, survey

INTRODUCTION

Gait impairments are common and disabling in Parkinson's disease (PD). These impairments range from shuffling to outright "freezing" of gait, characterized by sudden, often brief, episodes when patients feel as if their feet are glued to the floor [1]. Considering that dopaminergic treatment usually only has limited effect, supplementary non-pharmacological interventions, including the application of compensation strategies, are essential in the management of gait impairments [2]. These compensation strategies cover a wide range of "detours" to overcome gait impairments and thereby enable better functional mobility in daily life. Examples of such strategies include walking to the rhythm of a metronome, walking sideways, jumping, or mimicking the walking pattern of another person. An international group of experts recently summarized all strategies available based on reviews of video recordings of strategies invented by patients. A classification into seven categories of compensation strategies was proposed:

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external cueing, internal cueing, changing the balance requirements, altering the mental state, action observation/motor imagery, adapting a new walking pattern, and alternatives to walking [3]. Since one strategy that works well for one patient can have no, or possibly even a negative, effect on gait in another patient, a one-size-fits-all approach is unlikely to be effective. Additionally, even within one individual, one strategy may have different effects during different activities, or in different contexts (e.g., when preparing food in the kitchen vs. when walking outside) [4, 5]. Finally, even though robust evidence is lacking, there are concerns that the efficacy of particular compensation strategies may taper off over time, necessitating a switch to an alternative strategy. Consequently, patients will often require multiple strategies in order to perform their daily activities, over many years. Healthcare professionals should therefore focus on all available strategies, to ensure the optimal strategy can be determined for each individual patient and context. Here, we conducted an online survey among Dutch healthcare professionals who are regularly treating persons with PD in the Netherlands, to evaluate their knowledge of the various compensation strategies for gait impairments in patients with PD, and to investigate whether they applied these strategies in daily clinical practice.

METHODS

The study was approved by the Institutional Review Board of the Radboud University Medical Center in Nijmegen, the Netherlands (Ref: 2019-5737). The survey was distributed via ParkinsonNEXT (http://www.parkinsonnext.nl), an online platform that aims to unite patients, researchers and clinicians wanting to contribute to research and innovation in PD or parkinsonism. ParkinsonNEXT provides information about ongoing studies and facilitates the recruitment of patients. In the survey (Supplementary Material), each category of compensation strategies was briefly explained, and illustrated by several practical examples. Then, participants were queried whether they were previously aware of the existence of said category of strategies, and whether they had ever applied it in their daily practice. Since different professional disciplines can assume different roles in the management of gait impairments in PD, we made sure that our survey was broadly inclusive (e.g., PD nurses can inform patients about the existence of the strategies, while physical therapists specifically instruct patients how to apply the various strategies). Descriptive statistical analyses were performed using IBM SPSS 25 (SPSS, Inc., Chicago, IL, USA). The difference between ParkinsonNet affiliated professionals and non-affiliated professionals was assessed using an independent-samples Mann-Whitney U test.

RESULTS

In total, 365 Dutch healthcare professionals completed the survey, of whom 45 were excluded because they treated less than one person with PD per month. The included study sample of 320 professionals consisted of physical therapists (71%), general nurses (9%), occupational therapists (8%), movement disorder specialists (4%), specialized PD nurses (4%) and miscellaneous (allied) healthcare professionals (e.g., general practitioners, 3%). The predominance of professionals worked in multiple care settings, including: primary care practices (63%), nursing homes (30%), general hospitals (13%), or rehabilitation facilities (10%). Notably, 70% of respondents was affiliated with ParkinsonNet, a nation-wide network of healthcare professionals specifically trained in the management of PD [6].

Table 1 shows the median and range of the amount of categories known and applied by healthcare professionals. Only 35% of respondents was aware of the existence of all seven categories of compensation strategies, and 23% of professionals applied all seven available categories of strategies in practice when working with people with PD. The knowledge of, and the application of the strategies varied per profession, with physical therapists scoring highest, and movement disorders specialists and general nurses scoring lowest within the spectrum. Additionally, professionals affiliated with ParkinsonNet were better acquainted with the available strategies than professionals who were not affiliated ($p = 0.007$). Of all available strategies, external and internal cueing were best known among healthcare professionals (96%), and were also applied in practice by most respondents (by 94%, and 93% respectively). However, action observation and motor imagery was the least known category among professionals (60%), and was applied in clinical practice by less than half (45%) of the respondents. When asked which strategy they most often applied in clinical practice, 77% of healthcare professionals reported either internal or external cueing.

Table 1
Perceptions of compensation strategies for gait impairments, among 320 Parkinson's disease healthcare professionals

Profession	Number of strategies known		Professionals who know all 7 strategies		Number of strategies applied in practice*		Professionals who apply all 7 strategies in practice*	
	Median	*Range*	*n*	*(%)*	*Median*	*Range*	*n*	*(%)*
Physical therapists *(n = 228)*	6	[1–7]	98	(43)	6	[1–7]	68	(30)
General nurses *(n = 30)*	3	[0–6]	2	(7)	3	[0–6]	0	(0)
Occupational therapists *(n = 27)*	5	[3–7]	5	(19)	5	[2–7]	1	(4)
Movement Disorders specialists *(n = 14)*	5	[2–7]	1	(7)	4	[0–6]	0	(0)
Specialized PD nurses *(n = 12)*	4	[1–7]	2	(17)	4	[1–7]	1	(8)
Miscellaneous healthcare professionals *(n = 9)*	7	[3–7]	5	(56)	3	[2–7]	4	(44)
Total *(n = 320)*	**6**	**[0–7]**	**113**	**(35)**	**5**	**[0–7]**	**74**	**(23)**
ParkinsonNet affiliated *(n = 224)*	6	[1–7]	86	(38)	5	[0–7]	59	(26)
Not affiliated *(n = 96)*	6	[0–7]	27	(28)	5	[0–7]	15	(16)

*Referring to the application of the strategies in general, not within one individual person with Parkinson's disease.

Most respondents (55%) indicated that a lack of knowledge and skills concerning certain categories of compensation strategies was the main reason why they did not apply all categories in practice. Interestingly, while the majority of professionals reported their search for a suitable strategy to be a trial-and-error process (87%), which is a time-consuming approach, lack of time was not an important reason to refrain from applying all seven categories in clinical practice (8%).

Finally, a striking 88% of professionals indicated that they would like to receive additional training in the available compensation strategies for gait impairments. Also, 86% of professionals reported a need for additional patient information on the available strategies.

DISCUSSION

These findings identify a knowledge and skills gap concerning the application of compensation strategies for gait impairments in PD.

Compared to a previous study conducted in 2009, internal and external cueing strategies for gait impairments in PD are currently applied by a higher percentage of physical therapists (94% now vs. 73% then) [7]. Unfortunately, the other categories of compensation strategies are less widely known, and certainly less widely applied. This discrepancy between cueing strategies and the five remaining categories of compensation strategies may reasonably be explained by the fact that internal and external cueing have been most extensively studied and reported, whereas a category such as action observation and motor imagery is still relatively new. Because the efficacy of different strategies may well vary between PD patients, and even vary within a single patient depending on the context, it is especially important to broaden the professionals' treatment palette of available strategies beyond internal and external cueing.

Undoubtedly, the effectiveness and feasibility of different categories of strategies, as well as possible personal preferences, will affect a healthcare professional's decision to apply certain strategies while treating patients with PD and gait impairments. This may explain our finding that professionals often do not apply all categories known to them in daily practice. Further studies may focus on the experiences of patients to identify the efficacy and usability of the different categories of compensation strategies. They should also explore whether the efficacy of the different strategies could be predicted based on individual patient characteristics (e.g. presence of a specific phenotype of freezing of gait, or severity of any cognitive impairments). That way, a more personalized approach to gait rehabilitation in PD could be achieved, and be integrated in evidence-based protocols [8, 9]. Such an inventory could be achieved by taking advantage of online opportunities such as the Fox Insight cohort from the Michael J Fox Foundation (USA), or ParkinsonNEXT (NL).

Considering the study design, which included a high risk of selection bias, and the fact that this study was conducted in a country with a high-standard network such as ParkinsonNet, our current findings may overestimate the global knowledge and application of compensation strategies among healthcare professionals. The relatively high level of awareness

regarding compensation strategies most probably is due to the increased attention that has long been paid to the complex therapy of PD in the Netherlands. Examining whether the knowledge and application of compensation strategies for gait impairments in PD is less widespread in countries without such a network may be a topic of future research. Integrating the use of compensation strategies into educational programs, or developing a dedicated online platform about the various available strategies, might facilitate finding a suitable strategy for every person with PD who experiences gait impairments.

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CONFLICT OF INTEREST

The authors have no conflict of interest to report

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ETHICAL COMPLIANCE STATEMENT

This study was approved by the Institutional Review Board of the Radboud University Medical Center in Nijmegen, the Netherlands (Ref: 2019-5737). Informed patient consent was not necessary for this work. The authors confirm that they have read the Journal's position on issues involved in ethical publication and affirm that this work is consistent with those guidelines.

SUPPLEMENTARY MATERIAL

The supplementary material is available in the electronic version of this article: https://dx.doi.org/10.3233/JPD-202176.

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