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Original Article

Knowledge of Physiotherapists in Saudi Arabia About Lee Silverman Voice Treatment BIG Therapy for Parkinson's Disease: A Cross-Sectional Study

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Abstract

Background. Parkinson's disease (PD) is a widespread and challenging to diagnose the neurological condition. Tremor, rigidity, and slowness of movement are all symptoms of Parkinson's disease, which is caused by gradual neuronal loss in the substantia nigra and other brain areas. Physical therapy has the ability to enhance walking, balance, muscle strength, and fall reduction, according to growing evidence. The Lee Silverman Voice Treatment BIG (LSVT BIG) therapy is a Parkinson's disease rehabilitation approach. LSVT BIG therapy enables people with Parkinson's disease to utilize their bodies more normally. **Purpose.** The purpose of this study is to see how much knowledge physiotherapists in Saudi Arabia have about LSVT BIG therapy. **Method.** A cross-sectional study utilizing a survey to assess the knowledge of physical therapists in Saudi Arabia. It was disseminated via WhatsApp to one thousand physical therapists. The main outcomes were the extent of awareness regarding the LSVT Big method for individuals with Parkinson's disease. Data analysis. Statistical Package for Social Studies was used to analyze the data. The Chi-square test and Fisher's exact test were used for categorical variables. **Results.** In the current study, 263 male and female physical therapists completed the survey, males represented 63.9% of the participants, and 62% were in the age group of 24 to 30 years. The majority (84.8%) were Saudi. Only 12.5% of the physical therapists in this study were aware of the LSVT-Big therapy, and only 30.3% have ever attended the course or received a certificate**. Conclusion.** In Saudi Arabia, physical therapists had limited awareness and knowledge about the LSVT BIG therapy. Additional effort is required to train physical therapists about the benefits of the LSVT BIG therapy and how to use it with Parkinson's patients.

Keywords: Parkinson's disease; exercise; physiotherapy; Lee Silverman Voice Treatment BIG (LSVT BIG) therapy, balance training in geriatric.

Introduction

In 1817 ‘‘An essay on the shaking palsy’’, James Parkinson first stated the clinical syndrome that was later to hold his name (Parkinson, 2002). Parkinson’s disease (PD) is a common and complex neurological disorder. PD affects one to two individuals per 1000 at any time (Tysnes & Storstein, 2017). An anticipated seven to ten million humans globally are dealing with Parkinson's. The condition is more prevalent in males than females (Zafar & Yaddanapudi, 2023). In the Kingdom of Saudi Arabia, the expected prevalence of PD is twenty-seven per 100,000 individuals (Alyamani et al., 2018). PD is a progressive nervous disorder described by tremor, rigidity, and slowness of movements, and is related to progressive neuronal loss of the substantia nigra and different brain structures. Nearly all organs will suffer from PD, and management is difficult because the condition is progressive (Zafar & Yaddanapudi, 2023).

Dementia and dysautonomia are common, especially in the late stages (Gelb et al., 1999; Gibb & Lees, 1988). Although PD is usually thought of as a motor disease, it also causes nonmotor symptoms. Parkinson's disease's key NMSs are autonomic dysfunction, cognitive deficits, mood disorders, sensory dysfunction, pain, and sleep abnormalities (Barone et al., 2009; Sung & Nicholas, 2013). Constipation, increased salivation, and scent loss are also reported (Zafar & Yaddanapudi, 2023).

Classic PD motor symptoms originate from basal ganglia dopamine deficiency. Dopamine receptor-stimulating drugs treat PD symptoms. Symptomatic therapy, whether surgical or with drugs that boost dopamine levels or directly activate dopamine receptors, is the foundation of PD care. Deficits can be hard to control, and therapeutic side effects might worsen symptoms (Keus et al., 2009).

Tremor at rest, rigidity, bradykinesia and postural instability are the four key characteristics of Parkinson's disease. Furthermore, flexed posture and freezing have been added to the list of classic features of parkinsonism (Jankovic, 2008).

Physiotherapy Management

Growing data showed that physical treatment can enhance walking, balance, muscle strength, and fall prevention (Bouça-Machado et al., 2020; Tomlinson et al., 2014). Traditional physiotherapy aims to address movement and physical functions hindered by disease, injury, or disability (Fox et al., 2018). Active exercises include aerobic endurance and muscle strength training, cueing, and cognitive movement strategies improve physical capacity, gait, balance, posture, and transfer (Keus et al., 2007). Strength training against external resistance (cycle ergometer, weight machines, therapeutic putty, elastic, weight cuffs) may improve quality of life. Performance, balance, gait, and other physical measures improve, but not muscle strength (Ramazzina et al., 2017).

Active interventions like dance and music, boxing, Nordic walking, and resistance training have shown promise in treating motor problems (Pereira et al., 2019). Parkinson's disease rehabilitation uses Lee Silverman Voice Treatment BIG (LSVT BIG). Parkinson's patients that use LSVT use their bodies more normally (Cugusi et al., 2015). Positive outcome from intervention. Parkinson's patients have trouble with self-care (Alves Da Rocha et al., 2015). The strategy helps people remember how others see their movements, improving walking, self-care, and other activities. It also trains when and how to use more effort for larger motions. Outperforming general exercise and Nordic walking, LSVT BIG treatment improves Parkinson's disease patients' UPDRS motor scores (LaHue et al., 2016; McDonnell et al., 2018).

Therefore, the current study aims to investigate the extent of knowledge of physiotherapists in Saudi Arabia about LSVT big.

Methodology

Study Design and Setting

This study is designed as a cross-sectional study, to investigate the extent of knowledge of physiotherapists in Saudi Arabia about LSVT big.

The targeted participant was all physiotherapist in Saudi Arabia. The participants were employed and non-employed physiotherapists.

Survey Development

To the authors' knowledge, no validated study exists that assesses the expertise of physical therapists in Saudi Arabia regarding LSVT Big exercises for patients with Parkinson's disease. A survey was created to gather data on the awareness and application of LSVT Big exercises among physical therapists. This survey comprised eighteen questions addressing the demographics of physical therapists, their educational attainment, awareness of LSVT BIG exercises, and the adoption of these exercises among patients with Parkinson's disease. Ultimately, they were inquired about their personal perspectives on the LSVT Big exercises workshop and lectures. The survey was initially created in Arabic and subsequently approved by two language specialists. It was then translated into English and reviewed and authorized by two separate language specialists, one academic and one medical.

Survey Validity and Reliability

Prior to the study, face validity and pilot testing were conducted. This study utilized the Survey Instrument Validation Rating Scale (Oducado, 2020), developed by Oducado, R. M., to evaluate questions assessing the awareness, implementation, and perception of LSVT Big for clarity, comprehension, and appropriateness. This 5-point Likert scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree). Permission to use the scale was obtained from the creator, Oducado, R. M. The scale was administered to a focus group of five neurorehabilitation specialists, who evaluated the questions. Questions scoring below an average of 4.0 on any parameter were eliminated. The refined survey was then distributed to a representative sample of thirty physical therapists with diverse educational backgrounds and professional experiences.

Survey Distribution and Administration

The Saudi health commission was contacted to acquire data on the number of physiotherapists in Saudi Arabia. One thousand physiotherapists, both male and female, were contacted via WhatsApp. Responses were received between January 2022 and April 2022. The research invitation contained a summary of the disease and the objectives of the survey. Participants expressing interest in the survey accessed an electronic link leading to the survey description, where they provided informed consent and proceeded to the survey. Surveys were conducted anonymously and voluntarily via Google Forms (Alphabet Inc., Mountain View, California, United States), with a restriction of one response per participant.

Statistical Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS 22; IBM Corp., New York, NY, USA). Categorical variables were represented as percentages. The Chi-square test and Fisher's exact test were employed for the analysis of categorical variables. A p-value less than 0.05 is considered statistically significant.

Ethical Consideration

The Biomedical Ethics Committee at Umm Al Qura University reviewed and approved this study, with approval number (HAPO-02-K-012-2022-02-937).

Results

A total of 263 physical therapists participated in the current study, males represented 63.9% of the participants, and 62% were in the age group of 24 to 30 years. The majority (84.8%) were Saudi, and have only a bachelor of physiotherapy at 85.9%. most (72.6%) of the participating physical therapists have dealt with Parkinson's patients, and they reported that there are up to 5 Parkinson's patients attending their clinic weekly. Data is shown in table (1), figures (1-3).

Table1: Characteristics of the participants.

Question	Answers	Number	(%)
Gender	Male	168	63.9
	Female	95	36.1
Nationality	Saudi	223	84.8
	Non-Saudi	40	15.2
Academic Degree	Bachelor of Physiotherapy	226	85.9
	Master of Physiotherapy	32	12.2
	Ph.D. in Physiotherapy	5	1.9
Age	From 24 to 30 years	163	62.0
	From 31 to 35 years	65	24.7
	From 36 to 40 years	26	9.9
	Over 40 years old	9	3.4
Geographical Area	Central Region	29	11.0
	Eastern Region	34	12.9
	Northern Region	22	8.4
	Southern Region	35	13.3
	Western Region	143	54.4
Years of Experience	(0 to 5) years	160	60.8
	(6 to 10) years	71	27.0
	(11 to 15) years	21	8.0
	Over 16 years	11	4.2
Have you ever dealt with a Parkinson's patient in your clinic?	No	72	27.4
	Yes	191	72.6
The number of Parkinson's patients attend your workplace every week	(0 to 5) patients per week	231	87.8
	(5 to 10) patients per week	22	8.4
	(10 to 15) patients per week	8	3.0
	More than 15 patients per week	2	.8

Distribution of Academic Degree

Figure 1 shows the distribution of participants by academic degree: Bachelor of Physiotherapy (85.9%), Master of Physiotherapy (12.2%), and Ph.D. in Physiotherapy (1.9%). A pie chart is suitable for this categorical distribution.

Distribution of the Participants by Geographical Area

This figure shows the distribution of participants by geographical area: Central Region (11.0%), Eastern Region (12.9%), Northern Region (8.4%), Southern Region (13.3%), and Western Region (54.4%). A pie chart is also appropriate here for categorical data (Figure 2).

Distribution of the Participants by Years of Experience

Figure 3 shows the distribution of participants by years of experience: 0 to 5 years (60.8%), 6 to 10 years (27.0%), 11 to 15 years (8.0%), and over 16 years (4.2%). A bar chart is suitable for this data to show the comparison across experience levels.

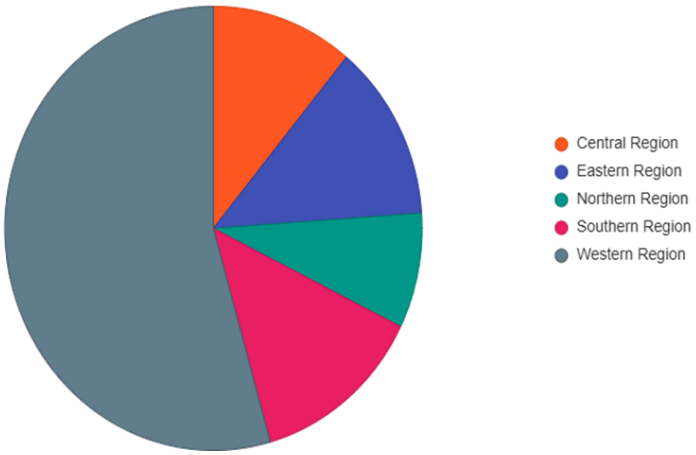

Figure2: Distribution of the participants by geographical area.

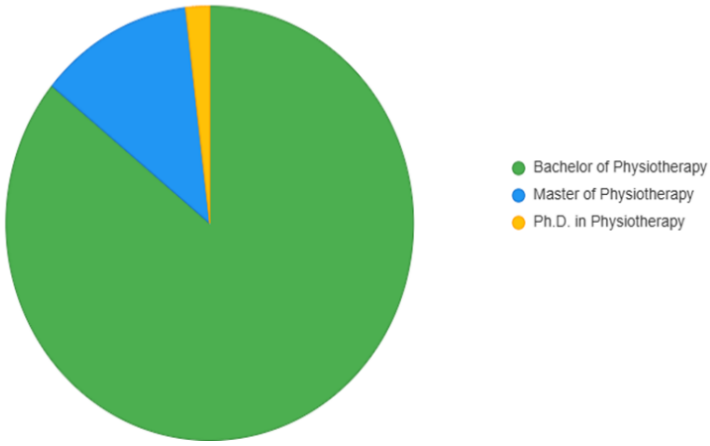

Figure1: Distribution of Academic Degree

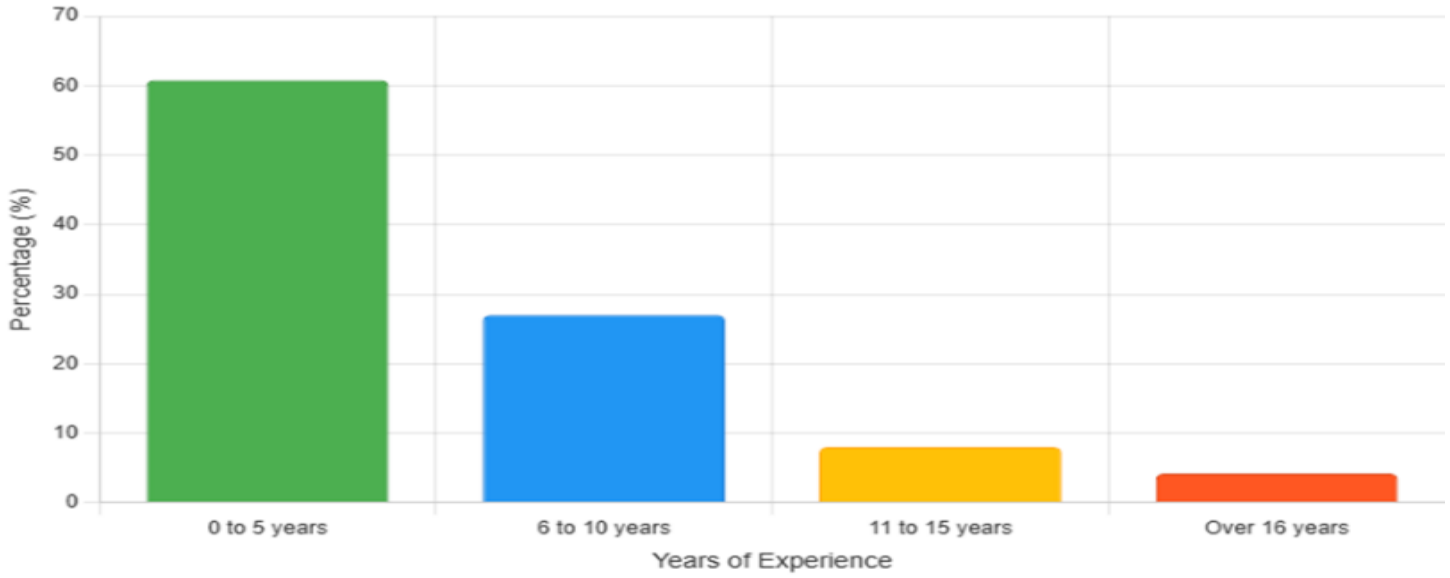

Figure3: Distribution of the participants by the years of experience

Table 2: Knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients.

Questions	Answer	Number	%
Do you know what is the LSVT-Big intervention for Parkinson's patients?	No	230	87.5
	Yes	33	12.5
Have you ever used LSVT-Big exercises for Parkinson's patients?	No	13	39.4
	Yes	20	60.6
Have you ever attended the LSVT-Big course or obtained its certificate?	No	23	69.7
	Yes	10	30.3
Does rehabilitation through LSVT-Big improve the patient?	No	4	12.1
	Yes	29	87.9

Do you think that all physiotherapists must know LSVT-Big?	No	11	33.3
	Yes	22	66.7
Have you ever studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree?	No	238	90.8
	Yes	24	9.2
Is it possible that you may use LSVT-Big for Parkinson's patients if you knew its benefits?	No	19	7.3
	Yes	243	92.7
Do you support holding courses and workshops to teach LSVT-Big?	No	19	7.3
	Yes	243	92.7
What is the reason for the underutilization of LSVT-Big for Parkinson's patients?	I cannot evaluate a patient's improvement through scientific standards	3	1.1
	Lots of talking with the patient	1	.4
	Lots of talking with the patient, the community customs and traditions refuse this idea	1	.4
	Lots of talking with the patient, there is 0 adequate infrastructure for rehabilitation	1	.4
	The community customs and traditions refuse this idea, there is 0 adequate infrastructure for rehabilitation	2	.8
	The patient does not believe in physical therapy	2	.8
	The patient does not believe in physical therapy, there is 0 adequate infrastructure for rehabilitation	1	.4
	There is 0 adequate infrastructure for rehabilitation	3	1.1
	There is 0 Arabic content to describe the exercises	6	2.3
	There is 0 Arabic content to describe the exercises, lots of talking with the patient	1	.4
	There is 0 Arabic content to describe the exercises, lots of talking with the patient, The community customs and traditions refuse this idea, The patient cannot perform this type of exercise, The patient does not believe in physical therapy, there is 0 adequate infrastructure for rehabilitation, I cannot evaluate a patient's improvement through scientific standards	1	.4
	There is 0 Arabic content to describe the exercises, lots of talking with the patient, the patient cannot perform this type of exercise, the patient does not believe in physical therapy, and there is 0 adequate infrastructure for rehabilitation	1	.4

	There is 0 Arabic content to describe the exercises, the community customs and traditions refuse this idea	3	1.1
	There is 0 Arabic content to describe the exercises, the patient cannot perform this type of exercise	1	.4
	There is 0 Arabic content to describe the exercises, the patient cannot perform this type of exercise, the patient does not believe in physical therapy	1	.4
	There is 0 Arabic content to describe the exercises, the patient cannot perform this type of exercise, the patient does not believe in physical therapy, there is 0 adequate infrastructure for rehabilitation, and I cannot evaluate a patient's improvement through scientific standards	1	.4
	There is 0 Arabic content to describe the exercises, the patient does not believe in physical therapy	1	.4
	There is 0 Arabic content to describe the exercises, the patient does not believe in physical therapy, and there is 0 adequate infrastructure for rehabilitation	1	.4
	There is 0 Arabic content to describe the exercises, there is 0 adequate infrastructure for rehabilitation	2	.8

The knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients is shown in table (2). Only 12.5% of the participating physical therapists know what the LSVT-Big intervention is, out of them, 30.3% have ever attended the LSVT-Big course or obtained its certificate and 60.6% have ever used the LSVT-Big intervention for Parkinson's patients. The majority (87.9%) of the participants who know about the LSVT-Big intervention agree that rehabilitation through LSVT-Big exercises improves the patient. Only 9.2% reported that they studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree. The majority (92.7%) of the participant's support holding courses and workshops

to teach LSVT-Big. Data is shown in Table 2.When the knowledge was assessed based on the participants' gender, we found no significant difference between males and females as shown in table (3), as all P values were >0.05. Though, a higher percentage of males were aware of the LSVT-Big exercises compared to females at 14.9% vs. 8.4%, respectively. Similar findings were found in terms of using the LSVT-Big exercises and attending its courses. In contrast, a higher percentage of female support holding courses and workshops to teach LSVT-Big exercises at 95.8% compared to 91% of males.

The Knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients by nationality is shown in table (4). It was found that 10.8% of the Saudi participants studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree compared to none (0%) of the non-Saudi ones, with a significant P-value of 0.015. All (100%) of the non-Saudi said that they may use LSVT-Big for Parkinson's patients if they knew its benefits and they support holding courses and workshops to teach LSVT-Big, compared to 91.4% of the Saudi ones, with a significant difference (P 0.038).

Table 3: Knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients by gender Chi-square and Fisher exact test

Question	Answer	Male		Female		P-value
		Number	%	Number	%	
Do you know what is the LSVT-Big intervention for Parkinson's patients?	No	143	85.1	87	91.6	0.129
	Yes	25	14.9	8	8.4	
Have you ever used LSVT-Big exercises for Parkinson's patients?	No	8	32.0	5	62.5	0.132
	Yes	17	68.0	3	37.5	
Have you ever attended the LSVT-Big course or obtained its certificate?	No	17	68.0	6	75.0	0.539
	Yes	8	32.0	2	25.0	
Does rehabilitation through LSVT-Big improve the patient?	No	3	12.0	1	12.5	0.691
	Yes	22	88.0	7	87.5	
Do you think that all physiotherapists must know LSVT-Big?	No	10	40.0	1	12.5	0.158
	Yes	15	60.0	7	87.5	
Have you ever studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree?	No	149	89.2	89	93.7	0.229
	Yes	18	10.8	6	6.3	
Is it possible that you may use LSVT-Big for Parkinson's patients if you knew its benefits?	No	15	9.0	4	4.2	0.116
	Yes	152	91.0	91	95.8	
Do you support holding courses and workshops to teach LSVT-Big?	No	15	9.0	4	4.2	0.116
	Yes	152	91.0	91	95.8	

Table 4: Knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients by nationality using Chi-square and Fisher exact test.

Questions	Answer	Saudi		Non-Saudi		P-value	Fisher Exact
		Number	%	Number	%		
Do you know what is the LSVT-Big intervention for Parkinson's patients?	No	192	86.1	38	95.0	0.088	confirmed ≈ 4.98
	Yes	31	13.9	2	5.0		
Have you ever used LSVT-Big exercises for Parkinson's patients?	No	12	38.7	1	50.0	0.640	confirmed
	Yes	19	61.3	1	50.0		
Have you ever attended the LSVT-Big course or obtained its certificate?	No	22	71.0	1	50.0	0.521	confirmed
	Yes	9	29.0	1	50.0		
Does rehabilitation through LSVT-Big improve the patient?	No	4	12.9	2	100.0	0.769	confirmed
	Yes	27	87.1	0	0		
Do you think that all physiotherapists must know LSVT-Big?	No	11	35.5	2	100.0	0.437	confirmed
	Yes	20	64.5	0	0		
Have you ever studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree?	No	198	89.2	40	100.0	0.015*	confirmed
	Yes	24	10.8	0	0		

Is it possible that you may use LSVT-Big for Parkinson's patients if you knew its benefits?	No	19	8.6	0	0	0.038*	confirmed
	Yes	203	91.4	40	100.0		
Do you support holding courses and workshops to teach LSVT-Big?	No	19	8.6	0	0	0.038*	confirmed
	Yes	203	91.4	40	100.0		

When the knowledge level was assessed according to the participants' academic degree, it was found that the highest percentage of those who know what the LSVT-Big intervention for Parkinson's patients was with a master's degree at 28.1%, with a significant p-value of 0.014. A significant difference (P 0.041) was also found when they were asked about their opinion that all physiotherapists must know LSVT-Big, as 100% of Ph.D. agree, followed by 78.35 of those with bachelor's, and 33.3% of those with master degree. There were no significant differences according to the academic degree in the remaining assessed items as shown in Table 5.

Table 5: Knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients by Academic Degree using chi-square.

Questions	Answer	Bachelor		Master		Ph.D. in Physiotherapy		P-value
		No.	%	No.	%	No.	%	
Do you know what is the LSVT-Big intervention for Parkinson's patients?	No	203	89.8	23	71.9	4	80.0	0.014*
	Yes	23	10.2	9	28.1	1	20.0	
Have you ever used LSVT-Big exercises for Parkinson's patients?	No	8	34.8	5	55.6	0	0	0.339
	Yes	15	65.2	4	44.4	1	100.0	
Have you ever attended the LSVT-Big course or obtained its certificate?	No	17	73.9	6	66.7	0	0	0.282
	Yes	6	26.1	3	33.3	1	100.0	
Does rehabilitation through LSVT-Big improve the patient?	No	2	8.7	2	22.2	0	0	0.534
	Yes	21	91.3	7	77.8	1	100.0	
Do you think that all physiotherapists must know LSVT-Big?	No	5	21.7	6	66.7	0	0	0.041*
	Yes	18	78.3	3	33.3	1	100.0	
Have you ever studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree?	No	205	91.1	28	87.5	5	100.0	0.621
	Yes	20	8.9	4	12.5	0	0	
Is it possible that you may use LSVT-Big for Parkinson's patients if you knew its benefits?	No	14	6.2	5	15.6	0	0	0.130
	Yes	211	93.8	27	84.4	5	100.0	
Do you support holding courses and workshops to teach LSVT-Big?	No	15	7.14	4	14.29	0	0.00	0.403
	Yes	210	93.33	28	87.50	5	100.00	

* Significant p-value; Data showed no significant difference when analyzed according to the participants' experience as shown in table (6), as all P values were >0.05.

Table 6: Knowledge of physical therapists in Saudi Arabia about LSVT Big exercises for Parkinson's disease patients by Years of Experience using the Chi-square test.

Questions	Answer	0-5		6-10		11-15		>15		P-value
		No.	%	No.	%	No.	%	No.	%	
Do you know what is the LSVT-Big intervention for Parkinson's patients?	No	142	88.8	59	83.1	19	90.5	10	90.9	0.622
	Yes	18	11.3	12	16.9	2	9.5	1	9.1	
Have you ever used LSVT-Big exercises for Parkinson's patients?	No	5	27.8	7	58.3	1	50	1	100	0.313
	Yes	13	72.2	5	41.7	1	50	0	0	
Have you ever attended the LSVT-Big course or obtained its certificate?	No	12	66.7	10	83.3	1	50	1	100	0.284
	Yes	6	33.3	2	16.7	1	50	0	0	
Does rehabilitation through LSVT-Big improve the patient?	No	2	11.1	2	16.7	0	0	1	100	0.882
	Yes	16	88.9	10	83.3	2	100	0	0	
Do you think that all physiotherapists must know LSVT-Big?	No	7	38.9	4	33.3	2	100	1	100	0.626
	Yes	11	61.1	8	66.7	0	0	0	0	
Have you ever studied rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree?	No	145	90.6	63	90	20	95.2	10	90.9	0.906
	Yes	15	9.4	7	10	1	4.8	1	9.1	
Is it possible that you may use LSVT-Big for Parkinson's patients if you knew its benefits?	No	12	7.5	5	7.1	2	9.5	0	0	0.792
	Yes	148	92.5	65	92.9	19	90.5	11	100	
Do you support holding courses and workshops to teach LSVT-Big?	No	11	6.88	6	8.57	2	9.52	0	0.00	0.744
	Yes	149	93.13	64	91.43	19	90.48	11	100	

Discussion

This study aimed to explore the knowledge of physiotherapists in Saudi Arabia about LSVT big exercise for Parkinson's disease patients. The study's main findings are that there is a lack of knowledge among physiotherapists in Saudi Arabia about the LSVT big exercise, only 12.5% knew what is LSVT and only 30.3% attended the LSVT-Big course or obtained its certificate.

The current study results also revealed that most respondents (90.8%) did not study rehabilitation for Parkinson's patients with LSVT-Big exercises in the course of physiotherapy for Neurology at the bachelor's degree.

However, 87.9% of those who were aware of it agreed that rehabilitation through LSVT-Big exercises improves the patient. Most physiotherapists (92.7%) support holding courses and workshops to teach LSVT-Big, with females

supporting holding courses more than males at 95.8% female compared to 91% of males.

To improve motor function, LSVT BIG was found to be more effective than general exercise or a short protocol (10 sessions instead of 16). This provides initial, moderate-quality evidence that LSVT BIG is more effective than general exercise or lower-dose amplitude-oriented training, with effects lasting for up to six months after the intervention. The intensity of LSVT-BIG differs from standard therapy in that it is prescribed over four weeks. There were no significant variations in motor scores when LSVT-BIG was compared to a shortened version of the same protocol (Ebersbach et al., 2015).

In persons with Parkinson's disease, LSVT-BIG was more effective than other interventions at improving motor function, with a notable trend toward faster gait speed. For neurological diseases, particularly PD, group-based exercise through community groups has been found to improve quality of life. Other advantages include promoting exercise in a safe and sociable setting, offering a consistent exercise routine, and instilling a sense of accountability in-group members (Ploughman et al., 2014; States et al., 2011).

The current allied health practitioner training and certification event is two days long and costs several hundred dollars. Few allied health clinics or hospital outpatient departments can conduct the 16-hour long sessions over a four-week period that the typical LSVT-BIG intervention requires, posing a significant obstacle to its implementation (Oducado, 2020).

Study Limitations

The sample size was inadequate to achieve a 95% confidence level with a 5% margin of error. The generalization of the results is restricted to physiotherapists in Saudi Arabia. The survey could have included additional questions to enhance understanding of the extent of application usage. Such inquiries may also reveal additional factors that could have impacted their implementation.

Further Recommendations

With the limitation of this study and from obtained results further investigations and research studies are recommended.

- Comparable research should definitely encompass a partially bigger sample to facilitate the generalization of results.
- Implementing more objective measurement techniques for the use of LSVT Big inside physiotherapy practices in Saudi Arabia.
- Acquisition of data through repeated measures for the assessment of variables.

Conclusion

This study's results indicated a minimal percentage of LSVT Big usage among physical therapists in Saudi Arabia. Insufficient awareness of LSVT Big could lengthen the rehabilitation period. Consequently, additional efforts are required to inform physiotherapists in Saudi Arabia of LSVT Big exercises for patients with Parkinson's disease. These objectives can be accomplished by educating physiotherapists on the benefits of LSVT Big and reducing rehabilitation length.

Author Contributions

All authors significantly contributed to the work reported, including conception, study design, execution, data acquisition, analysis, and interpretation. They actively participated in drafting, revising, or critically reviewing the manuscript, provided final approval of the version to be published, agreed on the journal submission,

and accepted accountability for all aspects of the work.

Data Availability Statement

The authors will transparently provide the primary data underpinning the findings or conclusions of this article, without any unjustified reluctance. If need from editorial team.

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