Perceptions and factors influencing exercise interventions in elderly patients with debilitating spinal surgery and healthcare professionals: A Qualitative Study

Abstract

BACKGROUND

Older spine surgery patients have a high incidence of debilitation, which can be managed with certain exercises.

AIM

To investigate the current status and influencing factors related to the knowledge of exercise intervention among patients and professionals.

METHODS

Descriptive research methods were used to classify and summarize patients and professionals' perceptions and factors affecting exercise interventions. Data were analyzed using the Colaizzi seven-step analysis method to distill and refine themes.

RESULTS

A total of 7 themes were identified: (1) the current status of patients' exercise is unsatisfactory; (2) patients' health literacy is low, coupled with a lack of social and family support; (3) there are numerous challenges with systematic exercise interventions; (4) healthcare professionals acknowledge the importance and need for exercise interventions; (5) there's a pronounced willingness among patients to participate in exercise intervention programs; (6) healthcare professionals believe that exercise interventions are beneficial; and (7) participants offered invaluable insights and suggestions on perioperative exercise during spinal surgery.

CONCLUSION

To investigate the current status and influencing factors related to the knowledge of exercise intervention among patients and the related healthcare professionals to provide a reference for the construction of exercise
management programs for these patients.

**Key Words:** Elderly; Frailty; Spine; Exercise; Qualitative Research

**Core Tip:** Older patients undergoing spinal surgery tend to exhibit a higher incidence of frailty, and older patients can combat and manage frailty with appropriate exercise training. Descriptive research methods were used to classify and summarize patients and professionals’ perceptions and factors affecting exercise interventions. To investigate the current status and influencing factors related to the knowledge of exercise intervention among patients and the related healthcare professionals to provide a reference for the construction of exercise management programs for these patients. Healthcare professionals should attend to the physical and psychological needs of patients, and offer tailored support.

**INTRODUCTION**

Frailty is a prevalent health issue characterized by symptoms such as fatigue, diminished endurance, weight loss, and reduced grip strength. Elderly patients undergoing spinal surgery often exhibit a high incidence of debilitation, especially those aged 60 years or older, with the incidence rate reaching up to 86.96%. Such debilitation can profoundly hinder a patient’s perioperative recovery and detrimentally affect their overall health. Specifically, older patients can combat and manage debilitation with suitable exercise training\(^1\), enhancing muscle strength and body balance, which in turn reduces the likelihood of complications. However, elderly patients undergoing spinal procedures often exhibit compromised somatic functions due to their underlying conditions \(^2\), and they might face limited mobility post-surgery. In such instances, debilitation can contribute to a decline in muscle mass, resulting in spinal structure instability that can be detrimental to a patient’s spinal health. Moreover, the combination of reduced muscle mass and strength can compromise an older patient’s balance, elevating the risk of falls and other
untoward incidents, thereby increasing the possibility of postoperative mortality. Hence, it is imperative to comprehend the nuances of exercise interventions and the determinants that influence them among elderly spinal surgery patients and their healthcare providers.

This qualitative research was undertaken to grasp the perspectives of elderly patients who underwent debilitating spinal surgeries and to understand the approaches of healthcare professionals who care for this demographic. The emphasis lies on understanding the cognitive and applied aspects of exercise interventions. The goal is to identify challenges and requirements in the current clinical setting, ultimately serving as a valuable reference for developing more efficient exercise management programs tailored for elderly patients post-debilitating spinal surgery in upcoming years.

MATERIALS AND METHODS

Participants and methods

A qualitative descriptive method was employed to discern perceptions and factors affecting exercise interventions. Semi-structured face-to-face interviews were conducted to collect qualitative data, to investigate the current status and influencing factors related to the knowledge of exercise intervention among older debilitated patients post-spinal surgery and the related healthcare professionals.

Research participants

Older debilitated patients scheduled for elective spinal surgery, along with orthopaedic and rehabilitation healthcare professionals from the Orthopaedic Department of a Shanghai hospital using purposive sampling from February to May 2023 in 2023 were selected as the research participants.

Inclusion criteria for elderly patients undergoing elective spinal surgery were as follows: (1) Age ≥60 years; (2) Clinical diagnosis of spine-related ailments (lumbar, cervical, thoracic); (3) Elective surgery patients; (4) FRAIL score of 1 or higher. The FRAIL scale encompasses 5 items, each worth one point, yielding
a total score between 0 to 5. Scores of 1-2 indicate pre-decay, while 3 or higher indicates decay. The items are: Fatigue (scored based on the reported duration of feeling tired in the past month), Stamina (ability to climb 10 steps without rest), Walking (ability to walk 100 meters independently), Illnesses (presence of 5 or more listed conditions), and Decrease in body mass (more than 5% decrease in the past year). Additionally, informed consent and willingness of patients and their families to participate were required.

Exclusion criteria for patients included: (1) Inadequate clinical information for valid data extraction; (2) Patients with acute spine trauma, multi-site injuries, or undetermined trauma sites; (3) Patients with cognitive disorders like Alzheimer's or other dementias, rendering them unfit for surveys; (4) History of alcohol or drug addiction; (5) Communication barriers impeding verbal exchanges.

For healthcare professionals, inclusion criteria were: (1) Possession of a health professional qualification certificate; (2) Proficient language skills, enabling clear expression; (3) At least 6 months of clinical experience with elderly spinal surgery patients; (4) Voluntary participation. Exclusion criteria for healthcare professionals were engagement in internships or external training.

**Sampling methods and process**

Purposive sampling was selected, the sample size was determined by the principle of data saturation. In total, 10 elderly patients scheduled for spinal surgery and 7 healthcare professionals were interviewed.

The Ethics Committee of Shanghai Tongren Hospital reviewed and approved the study. All participants voluntarily joined the research and provided signing informed consent forms before their interviews.

**Data collection**

The interviews consisted of seven open-ended questions for older patients and six open-ended questions for orthopaedics-related healthcare professionals, focusing on attitudes and experiences regarding exercise. The interview
questions in Table 1, based on status observations and a review of the literature [3-5], were used to explore the perception of cognitive and practical applications of exercise interventions. Each interview was conducted according to the willingness and convenience of the interviewee in a private and quiet meeting room. All researchers had past experience with qualitative research. No relationship was established prior to the study's commencement, and the participants did not know the researchers personally. Before data collection, a pilot interview with two nurses and a patient was conducted to ensure clarity and identify any potential problems. The pre-interviews were considered as tests only and were not included in the analysis.

The interviewer introduced himself/herself and explained the purpose of the interview at the start to ensure the content's confidentiality. The interviewer encouraged the participant to express his/her opinion in his/her own words during the session, with the researcher only asking follow-up questions when appropriate. The entire interview was audio-recorded in real-time. The face-to-face interview noted the participant's reactions, including facial expressions and body language. The questioning mode and order were adjusted flexibly based on the real-time dynamics of the interview. Each interview lasted approximately 45–60 minutes. Sampling was terminated at the point of data saturation when no new information emerged[6] from the last three participants.

The outline of the interview is shown in Table 1 and Table 2.

Table 1. Interview outline

<table>
<thead>
<tr>
<th></th>
<th>Outline of an interview with an elderly patient undergoing debilitating elective spinal surgery</th>
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<tbody>
<tr>
<td>1</td>
<td>What do you understand by frailty?</td>
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<td>2</td>
<td>What is known about exercise interventions in frailty management?</td>
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<td>3</td>
<td>What do you think are some of the frailty symptoms you are exhibiting?</td>
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<td>(What changes have occurred in your physical functioning, psychological</td>
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condition, and daily life as you have aged?)
4 How are you coping with the above changes?
5 What types of exercise do you think are included in exercise interventions and which do you prefer?
6 What do you think would be difficult and what would you like to be helped with if you were to do the exercise workout?
7 What do you hope to achieve with your exercise intervention?
8 What other suggestions do you have for frailty exercise interventions?

Table 2. Interview outline

1 Outline of interviews with healthcare professionals

1 What are your perceptions of exercise interventions in the management of frailty?
2 What are the effects of exercise interventions on elderly patients with frailty spinal surgery?
3 How to guide perioperative exercise rehabilitation for frailty patients undergoing spinal surgery on a daily basis?
4 What are the signs of frailty in elderly patients undergoing spinal surgery in the department?
5 How are patients instructed in exercise interventions within the department?
6 What are the current problems of clinical staff in instructing patients in the process of perioperative exercise?
7 What other observations and recommendations were made about perioperative exercise in elderly spine patients?

Data Analysis

The audio recordings were transcribed verbatim. Their accuracy was confirmed by repetitive listening within 24 hours of the interviews, and the transcriptions were labeled in conjunction with the interviewees' body
language and other cues. The data were analyzed using the Colaizzi seven-step process for the phenomenological approach\(^7\). Two experienced researchers independently analyzed the data, summarized the themes, and made changes based on feedback from the interviewees. The Colaizzi seven-step process includes the following steps: reading each statement carefully, re-reading to highlight and extract significant statements, formulating meanings from these statements, identifying and organizing the formulated meanings into theme clusters, exhaustively describing the investigated phenomenon, formulating this exhaustive description to pinpoint the fundamental structure, and finally, returning to the participants to confirm the findings. After the interviews, the audio recordings and extracted data on themes and sub-themes were shared with the participants to ensure that the findings accurately reflected their perceptions and not merely the subjective understanding of the researcher. All participants agreed to be re-contacted to confirm that the results truly mirrored their perspectives.

**RESULTS**

Tables 3 and 4 present the participants’ characteristics. The sample of study patients included six males and four females. The average age of patients was 69.5 years (range: 67-75). The frail score was 1. The sample of study healthcare professionals included three males and four females. The average age of patients was 33.43 years (range: 28-42). The average years of experience was 10.14 years (range: 8-15).

**TABLE 3** Characteristics of patients in this study (n=10).

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<tr>
<th>Participant no.</th>
<th>Sex</th>
<th>Age</th>
<th>Disease diagnosis</th>
<th>average monthly income (RMB)</th>
<th>Education level</th>
<th>Frail score</th>
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<table>
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<tr>
<th>Participant no.</th>
<th>Sex</th>
<th>Age</th>
<th>Years of experience</th>
<th>Lumbar/spinal disease</th>
<th>Years 1-10</th>
<th>Education level</th>
<th>School</th>
<th>Marital status</th>
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<tr>
<td>1</td>
<td>Female</td>
<td>67</td>
<td>compression 3000-5000</td>
<td>Lumbar spinal fracture</td>
<td>3</td>
<td>Junior High</td>
<td>School</td>
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<td>2</td>
<td>Male</td>
<td>71</td>
<td>Lumbar spinal stenosis 5000-8000</td>
<td>Primary</td>
<td>1</td>
<td>School and lower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>67</td>
<td>Mixed Cervical Spine Disease 5000-8000</td>
<td>College and above</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
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<td>75</td>
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<td>Junior</td>
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<td></td>
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<td>5</td>
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<td>Senior High school</td>
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<td>6</td>
<td>Male</td>
<td>73</td>
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<td>Junior High School</td>
<td>3</td>
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<tr>
<td>7</td>
<td>Male</td>
<td>69</td>
<td>Vertebral hernia &lt;3000</td>
<td>School and lower</td>
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<tr>
<td>8</td>
<td>Female</td>
<td>62</td>
<td>Lumbar spinal stenosis 3000-5000</td>
<td>Senior High school</td>
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<tr>
<td>9</td>
<td>Female</td>
<td>71</td>
<td>Lumbar spinal stenosis 3000-5000</td>
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<tr>
<td>10</td>
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<td>72</td>
<td>Lumbar spinal stenosis 3000-5000</td>
<td>Senior High school</td>
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**TABLE 4** | Characteristics of healthcare professionals in this study (n=7).
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<tr>
<th></th>
<th>Gender</th>
<th>Age</th>
<th>Exercise</th>
<th>Education</th>
<th>Marital Status</th>
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<tr>
<td>B2</td>
<td>Female</td>
<td>31</td>
<td>10</td>
<td>Bachelor's Degree</td>
<td>married</td>
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<tr>
<td>B3</td>
<td>Female</td>
<td>28</td>
<td>8</td>
<td>Bachelor's Degree</td>
<td>married</td>
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<tr>
<td>B4</td>
<td>Male</td>
<td>32</td>
<td>8</td>
<td>Bachelor's Degree</td>
<td>married</td>
</tr>
<tr>
<td>B5</td>
<td>Male</td>
<td>34</td>
<td>11</td>
<td>Bachelor's Degree</td>
<td>married</td>
</tr>
<tr>
<td>B6</td>
<td>Female</td>
<td>39</td>
<td>11</td>
<td>Bachelor's Degree</td>
<td>married</td>
</tr>
<tr>
<td>B7</td>
<td>Male</td>
<td>42</td>
<td>15</td>
<td>Doctorate</td>
<td>married</td>
</tr>
</tbody>
</table>

The findings were identified after analyzing the original data using Colaizzi's methodology. Six key themes emerged from the interview data. The first theme focuses on the current status and factors influencing patients' perceptions of exercise interventions for frailty management. This encompasses the poor status of patient exercise, low health literacy among patients, and a lack of support from society, family, and other entities for patients. The second theme highlights the current status and factors influencing healthcare professionals' perceptions of exercise interventions for frailty management. This theme reveals multiple challenges with systematic exercise interventions, the recognition of the importance and need for sports interventions, and the acknowledgment by healthcare professionals that exercise interventions are effective. They also have a strong willingness to participate in exercise intervention programs. The third theme indicates an inadequate knowledge of exercise interventions, incomplete professional knowledge, lack of systematic clinical intervention programs, and perceived low exercise efficacy in patients.

1. Current status and factors influencing patients' perceptions of exercise interventions for frailty management

Theme 1: Poor status of patient exercise

Influenced by their diseases and physical conditions, patients predominantly engage in a single type of exercise. Most opt for walking, slow movements, or recreational activities. Their sedentary time is extended, and the frequency of exercise is reduced. For instance:

- A1: "I get up every morning and take a walk in the neighborhood."
• A2: "I usually sit at home and don't like to exercise. Mostly, I just walk by myself; otherwise, there's little to no other movement."
• A3: "After getting up in the morning, I walk in the park."
• A4: "I mostly walk since I can't stand all the time."
• A8: "I still go for walks after dinner."
• A11: "I don't exercise much. Mostly, after dinner, I might go out for a walk and then come back."
• A5: "I often walk by myself and don't engage in many other activities."
• A6: "I primarily walk."
• A9: "Now, I engage in slow activities, practice some boxing, and take walks."

**Theme 2: Low health literacy among patients**

(1) Different perceptions of sports and exercise: Most patients recognise the benefits of exercise and believe that it is beneficial for both physical and mental health. A3 stated, "I think it is good to do more exercise to improve physical fitness; the quality of one's body will change and improve." A4 noted, "After a certain amount of exercise, physical fitness can improve." A1 commented, "It's not beneficial to watch TV at home constantly. Taking a walk provides fresh air and improves my mood." However, some elderly patients possess limited knowledge about types of exercise. A3 suggested, "It's good to play tai chi and sing songs." A8 reminisced, "I played table tennis and badminton when I was young." A9 added, "I liked all forms of sports in my youth," and elaborated, "I often practised the traditional martial art of baguazhang (Eight Trigrams Palm), played the piano, and engaged in writing and games such as mahjong."

(2) **Low self-efficacy:** Self-efficacy, referring to one's confidence and judgment about exercising amidst challenges, significantly influences patients' exercise habits. Even though many acknowledge exercise's benefits, several factors deter them. These include:

**Physical fitness.** A3 remarked, "Activities like Eight-duan brocade and martial arts were possible when I was young. Now, I'm limited to Tai Chi and walking."
A9 admitted, "I used to play ball, but now I can't."

**Disease factors.** A10 conveyed, "I'd like to go outside for fresh air, but walking is a challenge." A1 expressed concerns about walking rapidly due to osteoporosis and other health issues, while A3 mentioned energy limitations and disease restrictions. A5 shared an aversion to using exercise equipment at home and a general disinterest in exercise, a sentiment echoed by A11, who added the challenges of walking with leg issues.

**Time and economic constraints.** A2 highlighted, "I mainly face a lack of time and can't afford the sports I'd like to engage in." A4 and A8 both cited busy schedules and work commitments as limiting factors.

**Family factors.** A5 mentioned, "If not distracted at home, I might exercise. But current household responsibilities drain my time and motivation."

**Exercise atmosphere.** A6 and A8 emphasised the influence of a conducive exercise environment and the motivation derived from seeing others exercise.

**Personal interests.** A10 observed, "I've seen people box and punch with finesse, which is mesmerising. Yet, I lack personal interest." A11 indicated a disinterest in many sports, finding them unstimulating.

(3) A **single source of relevant knowledge**: Most patients predominantly rely on community publicity for information, indicating a narrow knowledge source. A3 observed, "Posters are displayed in our neighbourhoods." A1 credited community health centres and neighbourhood committees for providing education, and A11 lauded the community’s efforts in delivering professional education and health check-ups.

**Theme 3: Lack of support from society, family and other parties for patients**

Elderly patients expressed a desire for support from society, families, and hospitals. They stated the following: A4 mentioned, "There is no professional instructor to guide us in certain exercises like tai chi." A3 pointed out, "The equipment in the neighbourhood is not very comprehensive," and added, "I'm not sure about other simple exercises I can do." A6 said, "I have too many tasks
at home, and I don't feel motivated to exercise unless someone accompanies me." A7 echoed, "I'm not inclined to exercise unless I have company."

2. Current status and factors influencing healthcare perceptions of exercise interventions for frailty management

Theme 1: Multiple difficulties with systematic exercise interventions

(1) Clinical staff lack adequate knowledge about exercise interventions for debilitated patients. Typically, clinical staff concentrate on the most immediate and critical care issues, leaving a knowledge gap regarding exercise interventions for weakened patients. B1 stated, "The most pressing care issues for elderly spinal surgery patients include consciousness, vital signs, wound conditions, pain, high-risk conditions for VTE, and the risk of catheter slippage." B3 added, "We currently focus primarily on the patient's most urgent care issues." B7 mentioned, "There isn't a pressing need to emphasize this area or conduct this type of assessment."

(2) Healthcare professionals exhibit a knowledge deficiency concerning exercise interventions for debilitated patients, and there's an absence of detailed exercise programs. B4 said, "We conduct pre-operative exercises, pre-rehabilitation based on assessment outcomes, pre-operative muscle strength training, and other rehabilitation exercises." B5 stated, "After the second day, our rehabilitator provides instructions on executing the exercise." B1 commented, "We usually recommend routine breathing exercises and ankle pump exercises, but we don't delve much deeper, and we're unclear about other detailed movement recommendations." B7 added, "Our familiarity with these interventions isn't profound. We often rely on previous treatment plans."

B4 concluded, "There isn't a specialized person to teach, and there hasn't been a specific effort to learn the related knowledge. While we've heard of 'debilitation,' the nuanced exercise intervention program for debilitated surgical patients remains ambiguous."

(3) There's a lack of systematic management processes and tailored exercise
programs. B1 explained, "Our current assessment sheets cater to various functional evaluations, but we don't have exercise assessment sheets specifically for elderly, frail patients. There's been attention to some signs of a patient's frailty, but no dedicated care has been administered." B4 added, "Our main challenges are the assessments and scales, which aren't currently standardized." Concerning clinical workload and potential work increase, one statement was, "The abundance of forms increases the workload." B3 mentioned, "Bed management is demanding. Conducting interventions daily might not be feasible, and a single intervention weekly might prove ineffective." B2 asserted, "Prioritization is essential. There's a push to expedite assessments." There's also a notable absence of a systematic personalized exercise program. B5 shared, "We can only monitor patient exercises during discharge follow-ups. But post-discharge home exercises and comprehensive training programs aren't exhaustive." B4 observed, "For clinical issues like gait instability with reduced endurance, the primary suggestion is family accompaniment. If a patient needs to use the toilet, they require family support. While more care, supervision, and instructions are given during ward rounds, there's no specific exercise regimen provided, only the use of existing informational sheets."

**Theme 2: Recognise the importance and need for sports interventions**

Healthcare professionals acknowledge the significance and need for exercise interventions for debilitated patients undergoing spinal surgery. B6 stated, "Many patients in our care have experienced falls, and numerous are debilitated. This debilitation impacts a wide array of factors, highlighting a genuine need for rehabilitation. Patients with insufficient muscle strength face difficulties standing up." B2 added, "While most patients experience symptom relief after surgery, and even though they are provided with hormonal drugs and hyperbaric oxygen to enhance weak muscle strength, rehabilitation exercises remain a crucial intervention."
Theme 3: Healthcare professionals recognise that exercise interventions are effective and have a strong willingness to participate in exercise intervention programmes

B6 stated, "Implementing this could enhance the patient's well-being and elevate their quality of life. I am inclined to give it a try." B7 mentioned, "Introducing these interventions for elderly patients post-surgery could expedite their recovery and shorten their postoperative hospital stay." B3 added, "I'm willing to participate in this project if it can decrease the occurrence of adverse events and reduce the patient's hospital stay duration. We can initiate with a pilot program and continuously train and promote it to ensure widespread understanding."

DISCUSSION

This study reveals that the triad of healthcare professionals and patients have insufficient knowledge, incomplete professional knowledge, lack systematic clinical intervention programs, and exhibit low exercise efficacy in terms of exercise intervention. We should stress patient education and raise awareness. Elderly patients harbor misconceptions about exercising. Some believe that activities such as playing mahjong or socializing count as exercise, thereby overlooking the significance of daily physical activities. According to the World Health Organisation (WHO)[9], older individuals should engage in physical activities suited to their capacity and steadily amplify the intensity, replacing extended sitting with low-intensity physical activities for health benefits. We advocate for bolstering patient health education to cultivate a proper understanding of exercise.

We should motivate older individuals to surmount numerous obstacles to enhance exercise confidence. The interview results disclosed that several aspects sway patients' inclination to exercise. The majority of elderly patients grapple with multiple chronic ailments and medications, and certain diseases and physiological factors instill a fear of exercise, diminishing their
confidence\textsuperscript{[10]}. Hence, gradual and user-friendly exercise regimes tailored to the patients' specific conditions can be formulated, and peer motivation might be harnessed to arouse their enthusiasm.

Moreover, it's imperative to fortify multi-stakeholder backing to augment patients' intrinsic motivation for exercise. Elderly patients seek the support of multiple entities, encompassing society, hospitals, and families, when undertaking exercise interventions. The interviews revealed a proclivity among elderly patients towards group exercises\textsuperscript{[11]}, aligning with prior research\textsuperscript{[12]}. Hence, we could inaugurate group exercise sessions, family, and peer support schemes within hospitals, communities, and elderly volunteer services.

Additionally, we must enhance the proficiency of healthcare professionals and fortify exercise intervention guidance. Clinical healthcare professionals exhibit limited proficiency in exercise interventions for elderly spinal surgery patients. We suggest opting for a training approach that resonates with healthcare professionals to disseminate pertinent expertise, elevate their awareness, and master the associated knowledge. This strategy will redirect their focus towards patients' exercise interventions, equipping them to offer specialized counsel and devise appropriate exercise plans.

There is an even greater imperative to institute a standardized teamwork procedure. The survey indicated that a standardized care process for exercise intervention remains undeveloped. However, administering exercise interventions to elderly patients demands the concerted efforts of multiple stakeholders, including physicians, nurses, and rehabilitation doctors. We advise formulating and standardizing a procedure for exercise interventions to boost efficiency and heighten departmental engagement.

Lastly, it is crucial to intensify post-care management, enhance patient adherence, and guarantee the efficacy of exercise interventions. External oversight can augment patient adherence to some extent\textsuperscript{[13-14]}. Prior research
has demonstrated that rigorous external monitoring can bolster patient compliance, ensuring the desired outcome of exercise interventions. Thus, healthcare professionals must enhance post-discharge patient management and oversee the timely implementation of professional guidance and exercise routines. Tools like WeChat groups, telephonic monitoring, and both online and offline checkpoints can be utilized to optimize patient adherence.

CONCLUSION
Through this study, we delved into the understanding and determinants of exercise intervention by interviewing elderly debilitated patients undergoing spinal surgery and the pertinent healthcare professionals. The findings highlight notable gaps in the knowledge of exercise intervention across the three groups (healthcare workers and patients), marked by incomplete professional knowledge, an absence of structured clinical intervention programs, and diminished exercise efficacy in patients. Consequently, a multifaceted strategy is imperative to augment the motivation for exercise among elderly debilitated patients, aiming to enhance their life quality. Prospective research can be directed towards deciphering the challenges faced by healthcare professionals and patients during the exercise intervention execution, standardizing the approach, curating tailored exercise programs, and identifying the most suitable exercise intervention model for elderly patients in China.[5] Such endeavors aim to seamlessly integrate exercise intervention into the regular therapeutic regimen and daily routine of these patients, foster the post-surgical debilitation management in older individuals, and ultimately meet the objective of ameliorating their debilitating conditions and uplifting their life quality.[6] With these measures, we can more effectively cater to the physical and psychological requisites of elderly patients, offering robust support to help them adeptly navigate and surmount exercise-related challenges.

LIMITATIONS
Possible selection bias exists since the data were gathered solely from a hospital in Shanghai, leading to limitations in the generalization of findings. Multicentric studies are essential to bolster external validity.
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<td>2. William R. Oliver, Xianming Fang. &quot;Forensic Pathologist Consensus in the Interpretation of Photographs of Patterned Injuries of the Skin&quot;, Journal of Forensic Sciences, 2016 &lt;br&gt;Crossref</td>
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