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## Therapeutic patient education to promote occupational participation of adults with Spinal Cord Injury in pre-2023 war Gaza, Palestine: A feasibility study

### ABSTRACT

**Introduction:** Therapeutic patient education could improve rehabilitation outcomes and promote occupational justice. This study evaluated the feasibility of the Activities of Daily Living Education Manual for Spinal Cord Injury (SADL-eM) for people with Spinal Cord Injury living in Gaza, Palestine.

**Methodology:** In 2020, a single-group prospective feasibility study was used with a criterion sample of 15 participants with Spinal Cord Injury (SCI) recruited from an inpatient rehabilitation setting discharge list. Four domains of feasibility were assessed: demand, implementation, practicality, and acceptability, with predetermined criteria for feasibility in each domain. The secondary outcome was the reliability of the outcome measures used.

**Results:** Demand for this therapeutic patient education intervention was high (88%). 30 of 43 statements were positive (70%). Two themes emerged: 'Corresponding to my condition as an SCI' and 'Suggestions to improve the SADL-eM feasibility'. The therapeutic patient educational intervention feasibility was demonstrated by 60% recruitment, 100% adherence and zero% attrition rates. The reliability of the employed clinical tool outcome was low to very high (Cronbach Alpha: 0.43-0.97).

**Conclusion:** A feasibility study is essential before conducting a main randomised control trial to reduce threats of failure and improve the reliability of findings. The SADL-eM was a feasible therapeutic education tool for people with SCI living in Gaza before the 2023/2024 war on the Gaza Strip. It is likely to continue being an important (and possibly only) information source for Arabic-speaking people who sustain an SCI.

### Implications for Occupational Therapy Practice

- Co-designed and culturally relevant therapeutic patient education tools are more likely to be accepted and used by PW-SCI. This feasibility study was essential before conducting the main RCT because it highlighted limitations for consideration when planning for the main study. The value of including the perspective of PW-SCI in evaluating the feasibility of this intervention was evident in the qualitative data collected and led to improved delivery of the SADL-eM intervention.
- Since rehabilitation services at most hospitals in the Gaza strip have been destroyed following the start of the October 2023 war on Gaza, this study also highlighted the need to develop a follow-up system for PW-SCI in the Gaza Strip to monitor their medical and functional status and ensure proper referral for ongoing community rehabilitation.
- The SCIM-SR-Ar shows promise as a tool for follow-up and monitoring of the functional status of Arabic-speaking people with SCI internationally.
- Subscales of the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) have been used with people of Muslim faith in previous research. Due to gendered differences, we found this tool to be an unreliable measure of participation in spiritual activities in Gaza.
- Our freely available Arabic therapeutic patient education manual, co-designed in Gaza, may prove to be a valuable resource in post-war rehabilitation services.

## INTRODUCTION

The validity of an experimental study can be threatened by participants' recruitment, adherence to the intervention, and attrition before the study is complete<sup>1</sup>. Feasibility studies are a preliminary important step in trial design because they help researchers identify and avoid barriers to the implementation and completion of the main trial<sup>2</sup>. Feasibility studies typically focus on specific aspects of the research process or intervention, while subsequent pilot studies replicate the intended experimental design with fewer participants and/or recruitment sites, to test whether all trial components work together. For these purposes, feasibility studies use small samples<sup>3</sup>. This study aimed to evaluate the following: (a) the feasibility of a co-developed educational intervention, the Spinal Cord Injury Activities of Daily Living Education Manual (SADL-eM), for individuals of predominantly Muslim faith with spinal cord injuries (PW-SCI) living in the Gaza Strip in 2020; (b) the feasibility of participation by PW-SCI in a randomised clinical trial (RCT); and (c) the feasibility of selected outcome measures for a clinical trial.

Spinal cord injury (SCI) refers to damage to the spinal cord that results in a range of symptoms including paralysis of the arms and legs, spasticity, pain, loss of sensation, bowel, bladder and sexual dysfunction, and muscle degeneration<sup>4</sup>. SCI often results in life-long impairment and disability<sup>4</sup>. Consequently, research on SCI focuses on accelerating recovery and optimizing treatment outcomes<sup>4</sup>. Feasibility studies are a well-recognised research method to test interventions for PW-SCI. For example, previous feasibility studies with PW-SCI have focused on interventions that used the internet or mobile applications to improve self-management<sup>5</sup> and healthy lifestyles<sup>6</sup>. Other feasibility studies of interventions to improve pain management for PW-SCI have included massage<sup>7,8</sup>, cognitive behavioural therapy<sup>9</sup>, and internet-delivered mindfulness training<sup>10</sup>. The feasibility of community-based care<sup>11</sup> and the use of exoskeleton devices to improve functionality have also been investigated<sup>12</sup>. However, the researchers were unable to identify any previous feasibility studies of therapeutic patient education interventions for PW-SCI. Most of the previous feasibility studies were conducted in High-Income Countries (HIC) while only one was conducted in Bangladesh, a Low- and Middle-Income Country (LMIC) with predominantly Muslim faith<sup>13</sup>.

This research began with a systematic review that identified four RCTs that showed that therapeutic patient education improved some rehabilitation outcomes in PW-SCI such as participation in activities of

daily living, health behaviours, and quality of life<sup>14</sup>. Nevertheless, the body of evidence remains small as the four studies were conducted in HIC and none considered the unique participation needs of Muslim people with SCI. The researchers couldn't find an evidence-based Arabic therapeutic patient education tools relevant to PW-SCI with Muslim faith. As a result, the researchers used a participatory action research approach to co-develop an evidence-informed and contextually relevant SCI Activities of Daily Living education manual (SADL-eM) that promotes social justice and is specific for Muslims, PW-SCI from the Gaza Strip, Palestine<sup>15</sup>. Consistent with our commitment to including the voice of service users in our research, a key principle of the present study was to assess feasibility from the perspective of PW-SCI from Muslim faith living in the Gaza Strip who had recent experience with SCI rehabilitation during the year 2019.

This study aimed at evaluating the feasibility of the SADL-eM, participation in a planned RCT, and the selected outcome measures. The results of this initial feasibility study informed the planning and procedures for a subsequent pilot RCT and then the main randomised controlled trial. For these purposes, the study adopted three research questions:

1. Is the SADL-eM a feasible therapeutic patient education intervention for PW-SCI in the Gaza Strip?
2. What is the feasibility of participation in an RCT to determine the effectiveness of the SADL-eM for PW-SCI in the Gaza Strip?
3. Can the selected outcome measures be used with PW-SCI in the Gaza Strip?

## METHODS

### Study setting

Hamad Rehabilitation Hospital (HRH) was a private sector inpatient rehabilitation setting in the Gaza Strip of Palestine, LMIC. HRH provided post-acute comprehensive rehabilitation services for people from the Gaza Strip, Palestine, including PW-SCI. The rehabilitation team at HRH included physical rehabilitation doctors, rehabilitation nurses, physiotherapists, occupational therapists, speech therapists, clinical dietitians, psychologists, social workers, prosthetists and orthotists, and community-based rehabilitation workers.

### Design

A single-group prospective feasibility study was conducted in January 2020. The process of this study is illustrated in Figure 1 (below).

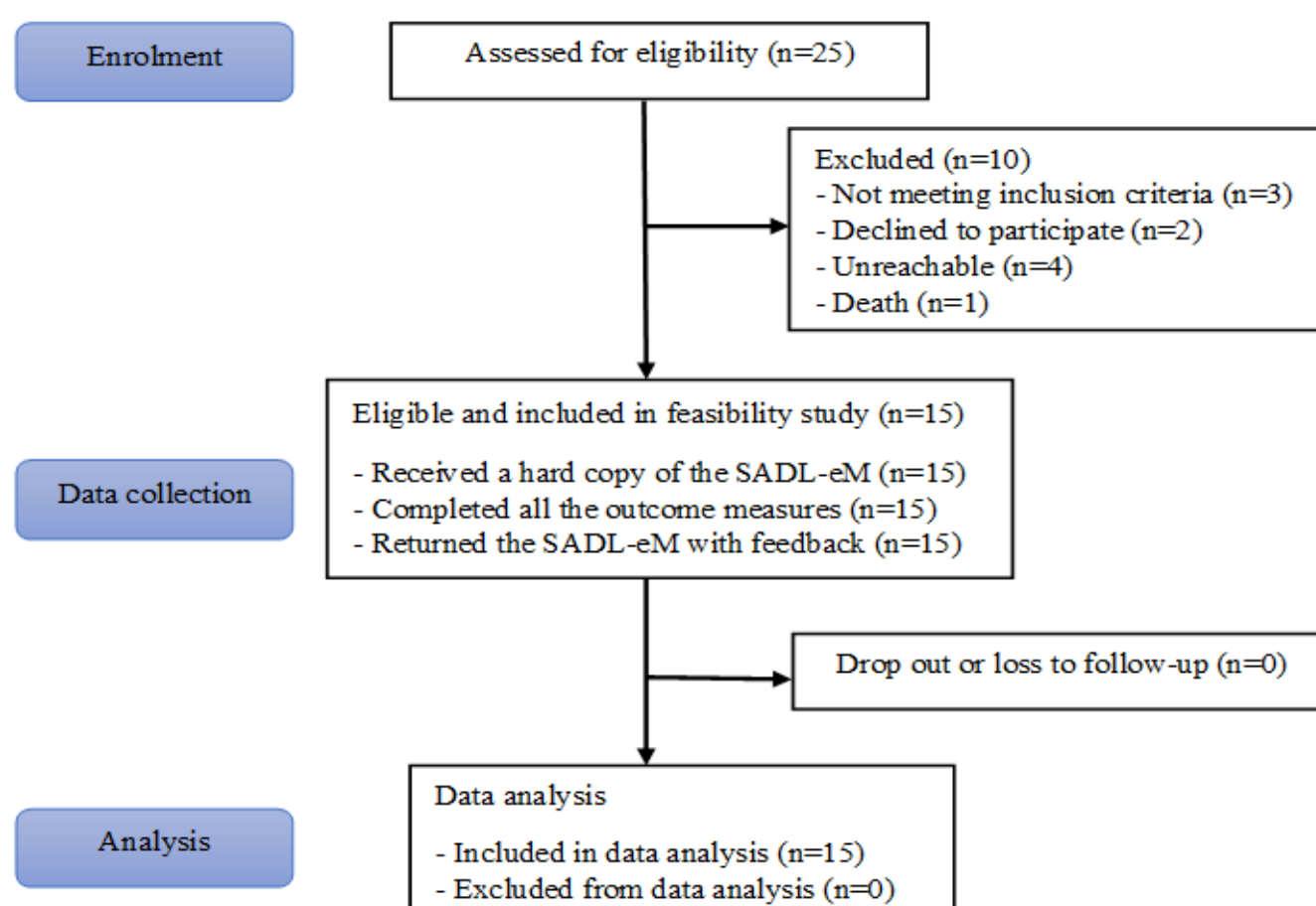


Figure 1. Feasibility study process

## Sampling

### Population

The total population included 25 PW-SCI registered on the HRH 2019 inpatient list, who had undergone rehabilitation and had been discharged to the community. All participants were Muslim adults with SCI from the Gaza Strip of Palestine.

### Recruitment

Participants were recruited from the 2019 inpatient discharge list of HRH. The patients were familiar with the principal researcher who was the head of the occupational therapy department in 2019. Using total population sampling, all 25 PW-SCI were called by phone to determine their interest to participate in the study. Following verbal consent, participants were screened for eligibility. Inclusion criteria were persons with SCI of any cause and any type, aged 18-65 years, with previous inpatient rehabilitation experience, and a good level of Arabic literacy. Exclusion criteria were cognitive impairment and/or a poor level of Arabic literacy.

### Sample size

Feasibility studies typically use small samples ahead of larger clinical trials. We intended to recruit all eligible participants from the HRH 2019 inpatient list. Of the 25 potential participants, 15 agreed to participate. Of the 10 who did not participate, three did not meet the inclusion criteria, one had died, four were uncontactable, and two declined to participate.

The researchers estimated that 15 participants were adequate to achieve the goals of this study<sup>3</sup>, and so continued with data collection. Further research with a larger sample is planned to test the impact of the SADL-eM based on the findings of the feasibility studies.

## Data collection tools

### Therapeutic patient education manual

The SADL-eM is a treatment resource designed for use during inpatient rehabilitation. It consists of 91 pages and is written in Arabic. The document is divided into five sections: (1) An introduction; (2) Information about Activities of Daily Living (ADL) that may be impacted by a SCI in the context of life in Gaza; (3) Assistive devices that are beneficial for PW-SCI; (4) Possible adaptations for home environments; (5) Guidance on community resources available to support individuals. The text and accompanying illustrations have been carefully selected to ensure contextual relevance and suitability for lay users. However, it is important to note that a good level of Arabic literacy is required to fully understand the material<sup>15</sup>. The SADL-eM can be utilized by occupational therapists on an individual basis, with three educational sessions per week, each lasting a minimum of 15 minutes. This approach is tailored to meet the educational needs and preferences of each individual with spinal cord injury (SCI). The manual requires no modifications to the treatment area or any specialized equipment. The therapist and the individual with SCI will continue to use the manual during treatment sessions until they mutually decide that its use is no longer necessary<sup>16</sup>.

### Outcome Measures

The Spinal Cord Injury Measure – Self Reported (SCIM-SR) is a 17-item patient-rated outcome measure designed for individuals with spinal cord injuries (PW-SCI). It assesses a person's ability to perform specific activities independently, with assistance, or using assistive devices. Research supports the criterion validity of the SCIM-SR<sup>17</sup>, and it has been widely translated<sup>17,18</sup>; however, it has not yet been translated into Arabic. For this feasibility study, the researcher collaborated with four experts to translate the SCIM-SR into Arabic using a forward-backwards translation method.

The Spinal Cord Injury Measure – III (SCIM-III) is a 17-item clinician-rated outcome measure designed to assess how well a PW-SCI can perform specific activities. It evaluates whether these activities are completed independently, with assistance, or using assistive devices. The SCIM-III can be administered through observation or interview. It

demonstrates resilience to cross-cultural differences, including those found in the Middle East. However, it is important to note that the tool is not available in Arabic<sup>17,18</sup>. The English version was used in this feasibility study.

The Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) is a 38-item self-report measure of religiousness or spirituality across 11 domains. The researchers selected two domains of interest: the Private Religious Practices Scale (PRPS) and the Organisational Religiousness Short Form (ORSF). The PRPS includes four questions and measures the frequency of an individual's involvement in religious activities<sup>19,20</sup>. The researchers included the Mosque as a place of worship (Q1) and the Quran as a religious text (Q3). The ORSF is a 2-item measure of the involvement of the individual with a formal public religious institution such as a church or mosque<sup>19,20</sup>. Neither measure was available in Arabic, and the English version was administered in combination with an Arabic translation for illustration.

Although the SCIM-SR includes a range of different daily activities important to PW-SCI, it does not measure all the ADL domains addressed by the SADL-eM and neglects participation in community life. We, therefore, developed questions to capture participants' perceptions of their performance in three additional domains. The domain of Driving and Community Mobility included one question on participation in driving and community mobility. The domain of Health Management included one question on self-management and one on personal device care. Participation in religious rituals included a question about participation in Wudu (washing extremities before prayers) and participation in Salat (Muslims prayers).

## Data collection

The feasibility study was conducted in the first two weeks of January 2021. A research assistant who was trained by the first author, briefed the candidate PWSCI by phone about the study purpose, approval, and data collection tools. Those who agreed to participate in the study were interviewed at their home. The interview included an introduction about the aims and process of the feasibility study, obtaining a written consent of participation, and administering data collection tools. The participants self-administered the translated Spinal Cord Independence Measure-Self Reported in Arabic (SCIM-SR-Ar) while the research assistant used interview to collect the biographical data and administered the other outcome measures. Each participant was then provided with a hard copy of the SADL-eM to read and comment on. Timeframe for this data collection was one week. Comments by the participants and the research assistant about the outcome measures and the SADL-eM were recorded either on the manual or separately. All the copies of the SADL-eM were returned in 7-10 days.

## Intervention feasibility

To determine the feasibility of the intervention the researchers evaluated the demand, implementation, practicality, and acceptability of the SADL-eM from participants' perspectives<sup>2</sup>. Demand for the SADL-eM was demonstrated by the proportion of eligible participants agreeing to participate in this study, and participants' comments on their interest in and need for the intervention, for PW-SCI during rehabilitation. Demand was acceptable if at least 70% of statements about the SADL-eM were positive, and if recruitment was greater than 60% of eligible participants.

Implementation, practicality, and acceptability were evaluated through inductive thematic analysis of participants' comments on the SADL-eM intervention. These three elements of feasibility reflected participants' views on the i) extent, likelihood, and how the SADL-eM could be fully implemented as planned and proposed in a rehabilitation setting; ii) whether the SADL-eM intervention could be delivered using existing resources without adverse effect on participants' health and wellbeing<sup>2</sup>; and iii) whether it was considered suitable and satisfying for the participants in the feasibility study<sup>2</sup>.

## Participation Feasibility

Participant recruitment, adherence, and attrition rates were considered important indicators of the feasibility of a future intervention study<sup>21</sup>. The researchers measured recruitment as the proportion of the total SCI rehabilitation population eligible to participate, and the consent rates of participation. Acceptable recruitment was 60% of eligible participants agreeing to participate. Adherence was assessed as the total number of participants who completed all the feasibility study phases. Acceptable adherence was considered if at least 75% of the eligible participants completed the study<sup>2</sup>. Attrition indicated the proportion of participants who dropped out or withdrew from the study at any time after being deemed eligible. Thirty per cent (30%) was considered a high attrition rate<sup>2</sup>.

## Outcome measures feasibility

The feasibility of the selected outcome measures was based on the validity of translation, the time needed for administration (investigator and participant burden), and the internal consistency reliability of the outcome measures. The International Society for Quality-of-Life Research (ISOQOL) recommendations for minimum standards for patient-reported outcome measures (PRO) includes the criterion that when PRO measures are translated to another language, the methods of translation should be documented and include evidence from qualitative methods to evaluate the translation<sup>22</sup>. The minimum standards for patient and investigator burden do not recommend a length of the measure but do suggest that burden is considered in the context of other measures used frequency of data collection, and participant characteristics. Time was acceptable if tools were completed within the standard range ( $\pm 20\%$ ). Finally, internal consistency reliability of  $>.70$  is recommended for between-group comparison<sup>22</sup>. The researchers set a  $< 0.50$  as very low reliability, a  $> 0.50$  as low reliability, a  $> 0.60$  as accepted reliability, a  $> 0.70$  as good reliability, a  $> 0.80$  as high reliability, and a  $> 0.90$  as very high reliability<sup>23</sup>.

## Data analysis

All qualitative (verbal and written) data were transcribed and then each statement made by participants was categorised by feasibility domain (demand, implementation and practicality, acceptability, and outcome measures). Each statement was treated as a unit and was used only once. None of the statements was excluded from the analysis. Within each feasibility domain, the statements were then separated into positive or negative groups. The researchers employed Braun and

Clarke's approach of inductive thematic analysis across all statements by coding each statement, grouping codes into categories, and then into themes<sup>25</sup>. This enabled the researchers to determine the key aspects of feasibility to maintain or improve in future research.

## Ethical Considerations

Necessary ethical approvals were obtained from relevant institutions before approaching study participants or any data collection: Stellenbosch University Human Research Ethics Committee (HREC Project ID: 1635) and Helsinki Committee for Ethical Approval (PHRC/HC/689/20). The trial was officially registered and has International Registered Report Identifier (IRRID: NCT04735887). All study participants were provided with comprehensive information and signed written consent. Freedom of participation, refusal, or withdrawal at any time was assured. Participant anonymity and confidentiality of information were sustained throughout the study. The study did not involve any harm, risk or discomfort to participants.

## COVID-19 Considerations

The research assistant followed the required coronavirus pandemic (COVID-19) precautions guidelines published by the World Health Organization (WHO)<sup>24</sup>.

## RESULTS

Of the 25 PW-SCI on the 2019 rehabilitation list, only 17 were eligible for participation (68%), while three were ineligible due to age under 18 years old (2) and poor level of Arabic literacy (1), four could not be reached due to a change in contact details, and one died (Figure 1, page 2). Of the 17 eligible participants, only 15 (88%) agreed to participate in the feasibility study.

As indicated in Table I (below) all participants were Arabic native speakers, and one was bilingual (Arabic native, English second language). All participants in the feasibility study had formal accommodation. Thirteen participants (86.7%) had been admitted to another inpatient rehabilitation facility before attending HRH. Eleven participants (73.3%) received therapeutic patient education during current admission while before current admission only one (6.7%) received therapeutic patient education. Nine participants (60.0%) completed their rehabilitation course before discharge, while five (33.3%) were discharged due to inadequate healthcare coverage. Only one (6.7%) participant was referred to another hospital for further management of medical complications. and admission to HRH.

**Table I: Participants' information**

Participant	Gender	Age (years)	Marital Status	Level of education	Employment	Cause of SCI	Level of SCI	Dysfunction	ASIA
P1	Female	62	Married	High school	Unemployed	Trauma	Lumbar	Paraplegia	A
P2	Female	32	Never married	High school	Employed	Trauma	Thoracic	Paraplegia	A
P3	Male	30	Widowed	High school	Unemployed	Tumor	Thoracic	Paraplegia	C
P4	Male	33	Never married	High school	Unemployed	Trauma	Lumbar	Paraplegia	C
P5	Male	44	Married	High school	Unemployed	Infection	Thoracic	Paraplegia	B
P6	Female	22	Never married	High school	Employed	Trauma	Thoracic	Paraparesis	C
P7	Male	17	Married	High school	Self-employed with employees	Trauma	Lumbar	Paraparesis	B
P8	Male	20	Widowed	High school	Unemployed	Tumor	Thoracic	Paraplegia	C
P9	Male	33	Married	High school	Unemployed	Tumor	Lumbar	Paraplegia	B
P10	Female	39	Never married	Bachelor	Unemployed	Transfers myelitis	Cervical	Quadriplegia	A
P11	Male	28	Married	Bachelor	Unemployed	Trauma	Thoracic	Paraplegia	A
P12	Female	34	Married	Diploma	Unemployed	Trauma	Thoracic	Paraparesis	C
P13	Male	32	Never married	High school	Self-employed with employees	Trauma	Cervical	Quadriplegia	D
P14	Male	30	Married	High school	Employed	Transfers myelitis	Lumbar	Paraplegia	A
P15	Female	64	Never married	High school	Self-employed with employees	Trauma	Thoracic	Paraparesis	B

## Feasibility of the SADL-eM as a therapeutic patient educational intervention

Demand for therapeutic patient education intervention was high (88%), with only two refusals. One refusal was a male patient who had a spinal cord tumour and justified that *'talking about my disease would make me sad for several days'*. The second refusal was also a male patient who did not attend the interview, which was rescheduled for his convenience three times.

Most statements were positive and valued the SADL-eM (70%), while some criticised it and recommended improvements (30%). Two themes emerged from the thematic analysis: (1) 'Corresponding to my condition as an SCI', which overarched three subthemes and (2) Suggestions to improve the SADL-eM feasibility.

### THEME 1: 'Corresponding to my condition as a person with SCI'

The first theme captures the viewpoint that the SADL-eM was seen by the participants as a feasible therapeutic patient education tool for PW-SCI in Gaza. Participants' comments in three subthemes indicated that the SADL-eM meets the therapeutic patient education needs of PW-SCI in Gaza, that the manual reflects their experience of rehabilitation, and that it is comprehensive.

#### Meets Therapeutic patient education Needs

PW-SCI need appropriate and available information to actively participate in planning for their rehabilitation, setting treatment goals, and making reasonable expectations for outcomes. P1 (female, 62 years) said: "I feel the education manual explains my exact condition and the situation I am in". P2 (female, 32 years) added: "Reading through the treatment program makes me expect all the things I will achieve". P3 (male, 30 years) argued: "This manual used to show me questions that I was ashamed to ask, such as marital life". P4 (male, 3 years) had a different perspective and said: "The manual introduced me to my rights as a person with an SCI. We need this information to be reinforced by the government. I need someone to help me establish a small project that is suitable for my situation and meets my vocational needs".

#### Reflects experience of inpatient rehabilitation

When considering their own experiences of inpatient rehabilitation, P5 (male, 44 years) said: "The manual is identical to the real rehabilitation scenario". P6, (female, 22 years) commented that "The manual has a full explanation about the rehabilitation team and the role of each of them". The inclusion of information about the rehabilitation team was also highlighted by another five participants. P7 (male, 17 years) added: "My condition and illness are well-described in the manual. The manual is corresponding to my condition as a [person with] SCI".

#### Information is comprehensive

The SADL-eM was also seen as a comprehensive therapeutic patient educational tool that was user-friendly. "The manual provided patients with a comprehensive and extensive explanation of the rehabilitation process" (P8, male, 20 years). "The manual is suitable for all daily activities" (P9, male, 33 years). P10, (female, 39 years) illustrated: "The manual is easy and clear for all patients, especially those who can read, as for those who can't read, the educational pictures helped them a little bit to understand". Participants highlighted that the SADL-eM was unique in that it includes success stories of PW-SCI from Gaza: "Successful stories provide the patients with hope and motivation" (P 11, male, 28 years).

### THEME 2: Improving the SADL-eM Feasibility

Participants offered a range of suggestions to improve the feasibility of the intervention. "The manual needs verbal clarification for those who can't read" (P12, female, 34 years). Two others (P13, male 32 years) and P14 (male, 30 years) requested that the font be enlarged, and a colour picture used. One of the critiques of the SADL-eM is that it is too long: "Redu[cing] the number of pages so that there is no boredom in the explanation" (P15, female, 64 years). Two participants with quadriplegia did not agree with the inclusion of driving in the manual. One participant suggested deleting sections on driving and home modification since these were not widely accessible to PW-SCI in the Gaza Strip. In contrast, P12 (female, 34 year) suggested that "more clarification is needed [on driving] and where it is possible to make driving aids". P9 (male, 33 years) suggested including a directory of stores that sell adaptive devices. When using the SADL-eM with inpatients, participants suggested therapists read through the information with PW-SCI during a treatment session, rather than leaving the person to read through the information themselves.

#### Recruitment, Adherence and Attrition

The researchers were able to recruit 60% (15/25) of people who underwent rehabilitation at HRH. Of those who were contactable and eligible, 15/17 (88%) agreed to participate in the feasibility study. Adherence to the feasibility study procedures was 100%. Although the SADL-eM collection was planned for one week after the initial visit, three participants requested extra time because they were busy and did not want to rush through the manual and give shallow feedback. All the distributed manuals (15) were collected with feedback and comments from participants. No participants dropped out (Attrition = 0%).

Table II: The properties of the employed outcome clinical tools in the feasibility study

Outcome measure	Reliability	Cronbach's Alpha
SCIM-SR-Ar	Good	0.77
SCIM-III	High	0.89
Private Religious Practices Subscale	Very low	0.43
Organizational Religious Practices Subscale	Good	0.74
Driving and Community Mobility	Very high	0.90
Health Management	Very high	0.97
Religious Rituals	Very high	0.93

The burden on investigators and participants of completing the selected outcome measures was low, with a mean time of interviews to collect biographical information and administer the outcome measures of 27 minutes (range: 18-43, SD: 6). The researchers assessed the construct validity of the SCIM-SR-Ar by comparing scores of this measure with the clinician-rated SCIM-III. The subtotal scores of the SCIM-SR-Ar and SCIM-III were close or similar in the self-care and mobility items. SCIM-SR-Ar self-care subtotal ranged 4-20 (Mean: 13.3, SD: 5.8) while SCIM-III self-care subtotal ranged 4-20 (Mean: 13.3, SD: 6.6). Similarly, SCIM-SR-Ar mobility subtotal ranged 0-39 (Mean: 17.7, SD: 11.4) while SCIM-III self-care subtotal ranged 3-39 (Mean: 17.3, SD: 11.7). In contrast, SCIM-SR-Ar breathing and sphincter management subtotals ranged between 16-40 (Mean: 26.7, SD: 7.2) while SCIM-III breathing and sphincter management ranged between 10-40 (Mean: 24.7, SD: 8.2). Participants reported higher performance in the SCIM-SR-Ar than SCIM-III regarding bowel and bladder management, intermittent catheterization, use of external drainage instruments, and bowel movements. This difference led to some variations between the total scores of the SCIM-SR-Ar (Range: 30-98, Mean: 57.7, SD: 21.9) and the SCIM-III (Range: 28-67, Mean: 50.3, SD: 20.1).

Cronbach's Alpha ( $\alpha$ ) was used to evaluate and compare the internal consistency reliability of the outcome measures. The reliability of the employed outcome clinical tools was good to very high ( $\alpha$ : 0.74-0.97), except for the Private Religious Practices Subscale which had very low reliability ( $\alpha$ = 0.43) (Table III, page 7).

## DISCUSSION

Feasibility studies are likely to improve the success of clinical trials and reduce research barriers and waste of resources<sup>2</sup>. The findings of this study suggested that the SADL-eM was a feasible therapeutic patient education intervention to implement during inpatient rehabilitation of PW-SCI within the Gaza Strip, Palestine. Furthermore, recruitment and retention for a randomised controlled trial to evaluate the effectiveness of the SADL-eM in improving rehabilitation outcomes was likely to be feasible, using the outcome measures the researchers identified. Nevertheless, this feasibility study has also highlighted many threats to the feasibility of an RCT, which needed to be considered, e.g., patient referral and registration system in Gaza and database of PWSCI.

### Why the SADL-eM was viewed so positively

Qualitative feedback on the SADL-eM as a therapeutic patient education intervention was significantly positive. The participants viewed the SADL-eM as a resource that they would have liked to receive during their inpatient rehabilitation, that it was practical and accessible to them, and that it included the right information. The lack of Arabic therapeutic patient education tools relevant to SCI contributed to creating the current demand for the SADL-eM and enhanced adherence to the feasibility study<sup>26</sup>. In addition, the process of co-development, including PW-SCI, promoted participants' interest, demand, implementation, practicality, and acceptability of the SADL-eM. This is similar to the findings of Shepherd et al<sup>27</sup>, where more than 100 rehabilitation professionals and PW-SCI from Canada co-developed therapeutic patient education materials for PW-SCI, video courses and other media assets. Shepherd and colleagues reported that the therapeutic patient education users were satisfied with the courses. Moreover, they perceived them to be effective<sup>27</sup>. Similarly, the participants in this study perceived the manual as a means of promoting health and participation, which would enhance active involvement in one's rehabilitation program. The inclusion of PW-SCI in the co-development of the SADL-eM is an attractive strategy for future RCT and the SADL-eM dissemination and expansion<sup>228</sup>. Another aspect is that the manual was typically similar to participants' inpatient rehabilitation experience<sup>6</sup>. In this way, the SADL-eM was not only seen as attractive and easy to read but also promoted positive expectations about rehabilitation. Moreover, the SADL-eM was seen by the participants as comprehensive in content and compatible with users' needs. Therefore, the SADL-eM can be a practical and easy-to-implement SCI therapeutic patient education tool.

### Limitations of the SADL-eM

No adverse events were reported, e.g., disagreement, discomfort, inability to handle or destroying of the hard copies of the manual, which indicated the practicality of the SADL-eM. Although the manual was edited by an expert in the Arabic language before use in this study, minimal typographical errors were highlighted by two participants. Sound language editing, friendly size of papers and number of pages, weight of the manual, and the type of paper are essential issues to improve manual implementation and acceptability<sup>29</sup>. It is essential that an education manual match users' expectations, preferences, and hand functions such as fine motor and the ability to flip pages<sup>30</sup>. Nevertheless, the participants in the feasibility study were interested in all details of the SADL-eM and highlighted a few limitations. Some participants were challenged by the level of complexity of the prescribed activities in the manual, and the lack of accessibility to rehabilitation resources.

### Feasibility of Participation in an RCT: Recruitment, Retention and Attrition

This feasibility study also provided us with valuable information regarding participants' recruitment, retention and attrition. The reliability of study results and the ability to generalize study findings to other contexts are threatened by the credibility of collected data and sample type<sup>31</sup>. The researchers provided full details about recruitment, participants, and injury characteristics. This feasibility study showed that the number of people undergoing inpatient rehabilitation for SCI at HRH was small, with only 25 admissions in 2019. Future RCT at HRH needs to address the low incidence of SCI and potential sample attrition<sup>32</sup>. PW-SCI usually stay several weeks in an inpatient rehabilitation setting and communicate with therapists, patients, and caregivers. This is a potential source of maturation and contamination bias for our planned RCT<sup>33</sup>. In addition, exposure to other educational interventions taking place by other disciplines and health professionals is a potential source of exposure bias. These types of bias are not avoidable but can be reduced by proper strategies such as blinding assessors, assuring no other substantial educational intervention is commenced during the intended RCT<sup>1</sup> and sampling from more than one rehabilitation facility.

Sample attrition is another barrier to clinical research, including RCT<sup>34</sup>. Although in this feasibility study, the researchers had 100% adherence and 0% attrition, participants' experiences of rehabilitation at HRH indicated potential problems for an RCT, e.g., discharge before completing the rehabilitation programme. Only 60% of participants in this study completed their rehabilitation course, while 40% were discharged prematurely due to lack of financial coverage or referral to another medical service for further necessary interventions. In addition, the waiting time before admission of 1 to 24 weeks indicates a risk to achieving the optimal rehabilitation potential of the PW-SCI during the planned RCT. Patients' matching, strict and narrow eligibility criteria, randomization, and blinding of assessor are suggested strategies<sup>34</sup>.

### Feasibility of the Outcome Measures

In considering the construct validity of the translated SCIM-SR-Ar and the SCIM-III, the researchers found important variations between the means of results of the SCIM tools in the sample compared to other published articles<sup>35</sup>. The researchers ascribed these mean differences to differences in settings, injury characteristics, sociodemographic factors, and the rater who administers the tool. This suggests adequate discriminant validity of these outcomes for our setting. The standard deviations for the SCIM-SR-Ar and SCIM-III ranged between 17.7 and 23.9, which indicates a nearly similar distribution of the values around the obtained means of the SCIM (Martinez & Bartholomew, 2017)<sup>36</sup>. The SCIM-SR-Ar and SCIM-III Standard Deviation values exist within the same range, which supports the feasibility of the employed outcome tools in this study<sup>37,38,39</sup>.

If the researchers exclude the Private Religious Practices Subscale that had very low reliability, the feasibility study findings also

demonstrated adequate reliability of the outcome measures ( $\alpha$ : 0.74-0.97), consistent with previous analysis of the reliability of these tools<sup>17-20</sup>.

**Table III: Benchmarking of outcome tools against the literature**

Reference	Baseline assessment	
	SCIM-SR	SCIM-III
Hossain et al., 2021	Control: 45.0 (SD: 19.5) Intervention: 44.4 (SD: 19.0)	
Anderson et al., 2011		29.8 (SD: 17.7)
Catz et al., 2006		37.5 (SD: 23.9)
Feasibility study	57.7 (SD: 21.9) *	50.3 (SD: 20.1)

\* SCIM-SR-Ar

The demand for the SADL-eM was promoted by the voice of participants, and involvement in completing the SCIM-SR-Ar by PW-SCI (self-reported), which established a just practice of research for the PW-SCI in the Gaza Strip<sup>40</sup>.

The variation between the two SCIM measures is attributed to the differences in the evaluations of the patient-administered tool (SCIM-SR-Ar) and therapist-administered tool (SCIM-III) and cultural differences, which influenced the data collected about bowel and bladder management. The issues of bowel and bladder management include privacy, and persons with SCI opt to conceal information from others to reconstruct notions and dignity of bodily aesthetics<sup>41</sup>. Cultural differences also influenced the data collected by the religious participation subscales. Originally, both scales were developed for the use of the Christian faith<sup>20</sup>. However, all the participants in the feasibility study were Muslims. When reflecting on the low reliability in these two subscales, the researchers realised that the difference in religious practice between Muslim men and women in the Gaza Strip could explain our findings. While men typically visit the Mosque to pray multiple times per day (organisational religiousness), women typically pray at home (private religiousness). For the pilot study, therefore, the researchers added two questions to the Private Religious Practices Subscale and the Organizational Religious Practices Subscale to improve low reliability (Cronbach Alpha: 0.43). Future pilot RCT and RCT studies need to measure the reliability of these scales.

### Limitations

This feasibility study has many limitations; however, its findings are important for conducting the main RCT. Limitations of this study include recruitment from a single clinical setting. Participants also did not provide any information relevant to the SADL-eM implementation determinants such as time, frequency of using the manual, and suggested range for educational sessions. The registration System was a barrier to follow-up where some candidates were unreachable. The fact that the researchers didn't do cognitive interviewing for the SCIM-SR-Ar is a limitation. The participants did not give any qualitative feedback or suggestions for improvement of the SCIM-SR-Ar.

### CONCLUSIONS

This study's findings suggest implementing the SADL-eM with PW-SCI was feasible, and led to a pilot RCT conducted between 2020 and 2021. This article provides occupational therapists working in low and middle-income countries a useful example of how to plan a feasibility study, and how to interpret the findings. The ongoing war in Gaza, which commenced in October 2023, has destroyed rehabilitation service provision for people with SCI and created a public health catastrophe<sup>42</sup>. We believe the SADL-eM has the potential to be an important, and

possibly only, source of information on activities of daily living for people who sustain spinal cord injuries during this war.

### Conflicts of Interest

The authors declare that they have no competing interests.

### Authors' Contributions

The three authors equally contributed to the study design and methodology, data collection and analysis, and manuscript preparation.

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