

Development and feasibility testing of a video-based exercise program for improving upper limb motor function among stroke survivors in a low-income setting

Hafsat Maina Ali^{1,2}, Surajo Kamilu Sulaiman³, Jibrin Sammani Usman¹, Muhammad Aliyu Abba¹, Aminu Alhassan Ibrahim³, Dauda Salihu⁴, Auwal Abdullahi¹, Umar Muhammad Bello⁵

¹Department of Physiotherapy, Faculty of Allied Health Sciences, College of Health Sciences, Bayero University Kano, Kano - Nigeria

²Department of Physiotherapy, Federal Medical Centre Jabi, Abuja - Nigeria

³Physiotherapy Department, Faculty of Applied Science, Tishk International University, Erbil, Kurdistan Region - Iraq

⁴Department of Psychiatric, Mental Health & Community Health, College of Nursing, Qassim University, Buraydah - Saudi Arabia

⁵Department of Physiotherapy and Paramedicine, Glasgow Caledonian University - UK

ABSTRACT

Background: Rehabilitation after stroke often falls short of providing optimal benefits to patients due to challenges related to restricted access, financial burden, and lack of adherence. Video-based intervention may help to overcome these barriers.

Purpose: To develop and test the feasibility of video-based telerehabilitation (TR) exercises for facilitating upper extremity motor function among stroke survivors.

Method: The study was conducted in two phases: video development and feasibility testing. The research team developed the video. Feasibility was assessed using a single-group pre-test–post-test design, focusing on adherence, acceptability, satisfaction, and motor function. A total of 30 stroke survivors were purposively recruited. Each participant received a 3-minute-42-second video-based TR program to be performed three times weekly over four weeks. Adherence and acceptability were monitored through participant-maintained diaries. Satisfaction and motor function were measured using the Client Satisfaction Questionnaire-8 (CSQ-8) and the Wolf Motor Function Test (WMFT), respectively.

Results: Twenty-nine participants (15 males) completed the study. The participants showed a strong commitment to the intervention with a 97% adherence rate. They accepted and reported the intervention as satisfactory. A remarkable score of satisfaction corroborates this based on the CSQ-8 (Mean [SD] = 28.6 [4.90]). A significant improvement in the WMFT was observed ($p < 0.001$) with a large effect size ($d = 1.14$) post-intervention. The mean difference was 8.8, with a 95% confidence interval ranging from 4.75 to 12.9.

Conclusion: The video-based TR is feasible and can be deployed as a supplementary intervention. Future evaluation of the intervention is warranted to establish its effectiveness.

Keywords: Acceptability, Adherence, Satisfaction, Stroke, Telerehabilitation, Video-based exercises

What is already known about this topic?

- Previous studies have demonstrated the effectiveness of video-based interventions in enhancing motor function recovery among stroke survivors, especially in high-income countries with abundant rehabilitation resources.

What does the study add?

- The present study adds to the existing literature by establishing the feasibility of video-based home exercises for facilitating upper extremity function among stroke survivors, particularly in low-resource settings like Nigeria.

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Corresponding author:

Surajo Kamilu Sulaiman

email: surajo.sulaiman@tiu.edu.iq

Introduction

Stroke is a clinical syndrome characterized by rapidly developing signs of focal or global disturbance of cerebral functions that last for more than 24 hours (1). Stroke has emerged as a significant health challenge in Nigeria (2,3). Studies indicate that stroke contributes to about 80% of neurological disabilities, highlighting a critical need for effective rehabilitation services (4,5). The burden of stroke is compounded by the fact that many stroke survivors experience

limited access to appropriate rehabilitation facilities. Stroke is one of the leading causes of long-term disability in adults and presents a global epidemic as well as a major public health concern (4,6). The high burden of stroke, combined with inadequate rehabilitation services, especially in low-resource settings, necessitates the development and evaluation of accessible and affordable rehabilitation strategies, such as telerehabilitation (TR) (5). Low-resource or low-income settings refer to areas with inadequate healthcare infrastructure and limited access to rehabilitation services, impacting patient recovery and quality of life (7).

Telerehabilitation (TR) utilizes electronic communications to deliver healthcare services, aiming to reduce healthcare expenses and ensure equitable accessibility for patients who are geographically isolated or facing financial hardships (8). Access to medical and rehabilitation services in low-resource settings is often limited due to factors such as a shortage of skilled professionals, remote geographical locations, and sociocultural barriers (9,10). The high prevalence of stroke and its burden on traditional face-to-face rehabilitation underscore the necessity of exploring and evaluating innovative approaches, including the implementation of TR-based intervention strategies (11). Thus, a video-based TR could offer a practical solution to help overcome the challenges associated with low-resource settings.

Studies from high-income countries have demonstrated the efficacy of video-based TR in improving motor function and quality of life among stroke survivors (12,13). Conversely, there is a paucity of evidence on the use of TR to facilitate upper limb functional recovery among stroke survivors in low-income countries, particularly in Nigeria (5,14-16). The use of TR in Nigeria is still developing, partly due to cultural barriers, financial factors, resource limitations, geographical isolation, compliance with rehabilitation, and lack of awareness (15). The use of mobile technology in Nigeria is on the rise. Approximately 70% of the population has access to mobile phones, and internet penetration has reached about 50% of the population (17). These statistics suggest a growing infrastructure that can support TR.

Notwithstanding, some studies in Nigeria have shown the effectiveness of TR in improving clinical outcomes such as motor and functional abilities in low back pain and osteoarthritis (14,16). Moreover, a study similar to the current one examined the development and feasibility of a Yoruba language video-based home exercise program for stroke survivors in Nigeria (5). Although the study demonstrated the feasibility and acceptability of the program, the language used may limit the video's applicability to only Yoruba speakers. An English-based video would likely have a greater outreach than a Yoruba-based video, as English is the adopted national language in Nigeria (18).

Despite the current emerging evidence for the benefits of video-based TR, it remains an under-researched area, especially in low-resource settings, and its implementation in Nigeria seems to be low due to several mitigating factors (15). Hence, the objective of this study was to develop and evaluate the feasibility of an English-language, video-based TR program for stroke survivors with upper extremity

impairment in Nigeria, using a single-group pre-test–post-test design.

Methods

The study was conducted in two phases: video development and feasibility testing.

Video development

The development of the video-based TR required a focus group to select the appropriate exercises and craft a simple video. A videographer was involved in developing the video to ensure clarity and quality following the selection of the exercises.

Focus group

We conducted one session of a focus group that lasted for one hour and thirty minutes in a physiotherapy department. The participants of the focus group were selected purposefully to ensure the inclusion of information-rich cases in the group (19). The participants included five physiotherapists and a videographer. Semi-structured questions were used to guide the focus group discussion around the video content. Specifically, the exercises to be selected, the length, and the quality of the video. During the focus group session, the context of the discussion was provided, ground rules were set, and the purpose was explained to the participants. The discussion was anchored by the first author with the help of a research assistant.

Focus group outcome

The selected exercises were based on the recommendations of the National Stroke Foundation Clinical Guidelines (20). The guidelines included techniques such as constraint-induced movement therapy, mobility-task training, and repetitive task-specific training (for example, shoulder flexion and extension, elbow flexion and extension, forearm supination and pronation, and hand slide movement).

These exercises were designed for individuals with mild to moderate upper limb impairments, operationalized as a score of two on the Modified Ranking Scale (mRS). This classification was used to ensure that stroke survivors retained sufficient functional mobility to follow and perform the prescribed movements. Exercises were adapted to meet individual needs while maintaining a consistent level of intensity across the stroke survivors.

An agreement was made about the concept of video, including duration, the individual to be featured in the video, clarity of demonstration, audiovisual quality, and cultural appropriateness.

Video production

A script was created based on the insight gathered from the focus group discussion. During the video shoot, attention was paid to factors such as lighting and sound. Adjustments to the video were made based on additional insights or recommendations from the focus group. The videographer



recorded the exercise program into a video of 14 MB with a duration of three minutes and forty-two seconds. The quality of the video is based on Motion Picture Expert Group-4 (MPEG-4) with a resolution of 360 x 640.

Testing and iteration

The video-based TR was sent to three participants via WhatsApp Messenger to gather feedback on its effectiveness and appeal. The feedback from the three participants was used to make further improvements to the video content. Final adjustments were made, and the video-based TR was finalized for distribution. The final video began with a brief introduction and included five short exercises. The stroke survivors were required to adhere to the exercises prescribed in the video.

Instruction manual

An instruction manual was developed to accompany the video-based TR. The manual contained written information about the video-based exercise program, including a diagrammatic illustration of the prescribed exercises. The exercises were described in plain English. To ensure comprehension among participants with lower literacy levels, the written instructions were crafted using clear and straightforward sentences, avoiding complex medical terminology (supplementary file).

Feasibility testing

We used the CONSORT 2010 statement extension to randomized pilot and feasibility trials to report the feasibility testing (22).

Study design

We employed a single-group pretest-posttest feasibility design to test for adherence, acceptability, satisfaction, and preliminary effectiveness of the video-based TR exercise. The methodology of this study was adapted from the work of Odetunde et al. (5).

Participants

The participants were screened using predetermined eligibility criteria. The inclusion criteria were: an episode of a cerebrovascular accident leading to one-sided hemiplegia, mRS <2, Adults (25-65 years), Individuals capable of initiating wrist and finger extension, stable cognitive functioning (Montreal Cognitive Assessment, MoCA \geq 26), and having a caregiver during the TR session. Additionally, possessing a phone with internet access and having basic functional literacy, such as practical skills needed to read, write, and do math for real-life purposes, and performing simple tasks to understand short tests in stroke survivors with upper extremity impairment were considered (23). The exclusion criteria included: a major active, coexistent neurological or psychiatric disease (including dementia), history of serious chronic obstructive pulmonary disease or oxygen dependence, previous upper limb injury or condition that limits

upper limb range of motion, and significant visual impairment. Visual impairment was assessed through self-report and observable functional limitations during screening; no standardized visual assessment tool was used.

Intervention

The intervention was a three-minute forty-two-second video-based TR for the upper extremities, which comprised five exercises: shoulder flexion and extension, elbow flexion and extension, forearm supination and pronation, hand slide movement, and constraint-induced movement therapy. The exercise dose for shoulder flexion and extension, elbow flexion and extension, forearm supination and pronation, and hand slide movement consisted of 20 repetitions in two sets. For the constraint-induced movement therapy, the unaffected hand was constrained for six hours, enabling the affected hand to perform 200 repetitions of intensive training for 2 hours per day of activities of daily living.

The video-based TR, including the instruction manual, was distributed to the stroke survivors. The manual contained information on how to perform the exercises demonstrated in the video. The patients were asked to watch the video. The video clip was played three times, where the participants observed the displayed movement and replicated it using their affected upper extremity. The participants found it easy to perform the movement without encountering any difficulty during the trial. The participants were asked to complete their home exercise programs three times a week for four weeks with no follow-up or access to a physiotherapy clinic. After this period, follow-up outcomes were measured by an independent assessor.

All participants were requested to keep a diary to record their training. For the prevention and management of adverse events, participants can call the researcher at any time if they have any questions or problems. If participants experienced an intolerable muscle pain or injury, they were advised to visit a hospital and were examined for their condition by the principal investigator.

Outcomes

The outcomes of the study included feasibility aspects (adherence, acceptability, and compliance, which were evaluated based on participant-maintained diaries), satisfaction with the intervention (measured with the Client Satisfaction Questionnaire [CSQ-8]), and motor function (assessed with the Wolf Motor Function Test [WMFT]). Adherence to the intervention involves recording withdrawals and intervention dropout rates, together with the number of therapy sessions completed. Adherence was evaluated through self-reported diaries. Patients were instructed to document the frequency of daily sessions and the duration of home exercises completed during each session. Acceptability and compliance were evaluated based on diary completeness, participant feedback, and expressed willingness to continue the exercise program. The self-reported diaries were verified and monitored by the assessor. However, there was no objective monitoring.



The WMFT is a valid and reliable instrument used in the assessment of upper extremity motor function of stroke patients (24). The WMFT has been validated for use with patients ranging from acute to chronic stroke stages (25). The participants' motor function was evaluated at baseline and after four weeks of intervention. The WMFT consists of three parts (time, functional ability, and strength), including 15 function-based tasks and two strength-based tasks. Items 1-6 involve timed functional tasks, 7-14 are measures of strength, and the remaining 9 items consist of movement quality when completing various tasks. It uses a 6-point ordinal scale of 0-5 with a maximum score of 75, where lower scores indicate a lower functioning level.

The CSQ-8 is a valid instrument used to evaluate the satisfaction of patients (26). The CSQ-8 scores range from 8 to 32, with higher values indicating higher satisfaction. Items are scored on a Likert scale from 1 (low satisfaction) to 4 (high satisfaction) with different descriptors for each response point. The CSQ-8 is advantageous because it is a concise, 8-item tool that has shown strong reliability and validity in a variety of settings (27). The participants' satisfaction was assessed in the fourth week.

The demographic characteristics and clinical variables of the participants were assessed at the beginning of the study using a biographic information sheet. The initial outcomes were evaluated before the start of the study. Subsequent follow-up outcomes were assessed by an independent evaluator who was not involved in patient recruitment or management.

Sample size estimation

The sample size was estimated using the G*Power software (28). We employed an alpha level of 0.05, a power of 80%, and an effect size of 0.5 (5). The estimated sample size was 21 participants. However, to accommodate a projected attrition rate of 42%, the final enrollment was adjusted to 30 participants. We selected the participants using a purposeful sampling technique to ensure the inclusion of only participants who met the eligibility criteria.

Ethical consideration

This study was approved by the Health Research Ethics Committee of the College of Health Sciences, Bayero University Kano, Nigeria (BUK/PHYSIO/03/0001). Additional clearance was also obtained from the Ethical Committee of the Federal Medical Center Jabi, Nigeria (FMCABJ/HREC/2023/085). The study was conducted at the Physiotherapy Department of the Federal Medical Center, Jabi, Nigeria. Before enrollment, all participants were provided with a written information sheet developed by the research team, which contained detailed information about the study's objectives, procedures, potential risks and benefits, confidentiality measures, and their right to withdraw at any time during the study. Written informed consent was given by the participants before the commencement of the study, after the details of the study had been thoroughly explained to them (via the information sheet). The study was registered prospectively with the Pan African

Clinical Trials Registry (PACTR20240374656923) on the 28th of March 2024.

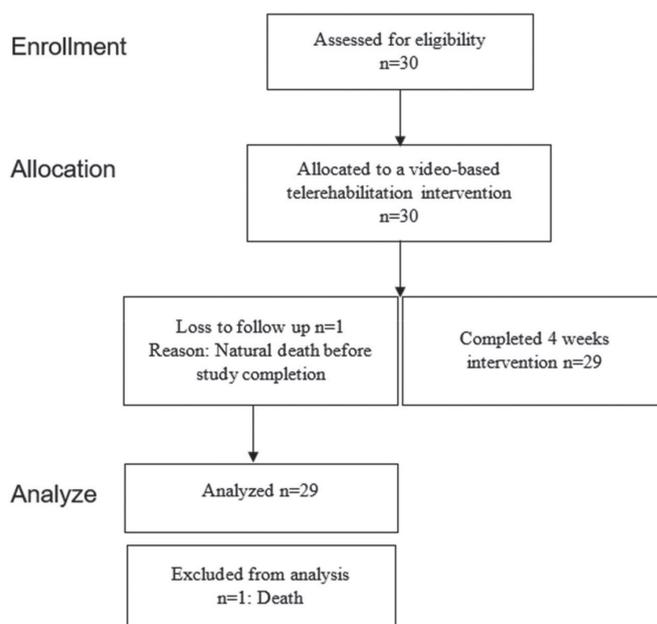


FIGURE 1 - Study flow diagram.

Data collection procedure

The participants were recruited from the Physiotherapy Department of the Federal Medical Center, Jabi, Nigeria, where they were admitted to the rehabilitation ward and the Physiotherapy Outpatient Clinic. Before discharge, eligible participants were introduced to the video-based TR intervention and were informed of the study's purpose and procedures. Thereafter, informed consent was obtained from each patient, and confidentiality was ensured by storing the data in password-protected files on a secure computer with restricted access. A study assessor conducted the baseline evaluation, which included demographics, clinical variables, and motor function assessments. Following completion of the baseline evaluation, the video was sent to the participants via WhatsApp messenger, and the manual explaining the exercises with the aid of a diagram and the importance of keeping their routine for the following 4 weeks was attached. The study participants were expected to adhere to and comply with the exercises shown in the video. Participants were required to indicate whether they had fulfilled their exercise requirement in each session. Adherence was monitored through participant-maintained diaries. Acceptability was evaluated based on diary completeness, participant feedback, and expressed willingness to continue the exercise program. The participants' compliance was supervised, and regular follow-ups were conducted via WhatsApp Messenger once a week. An attrition rate was calculated based on the turnout of the study participants post-intervention. The participants were reassessed in the 4th week by the assessor upon completion of the intervention.

Statistical analysis

Information gathered was coded and entered into the computer with the statistical package for social sciences SPSS version 20 (SPSS Inc., Chicago, IL, USA). A probability level of 0.05 was used to indicate statistical significance. Descriptive statistics of mean, frequencies, and percentages were used to summarize the data (socio-demographic and clinical variables). A paired t-test was used to analyze the differences in WMFT mean scores between pre- and post-intervention. Effect size was calculated using the formula $d = t/\sqrt{N}$ (29). Where t is the t -score and N is the total sample size. Based on Cohen's d criteria, the effect size values were interpreted as trivial (<0.2), small (≥ 0.2 and <0.5), moderate (≥ 0.5 and <0.8), and large (≥ 0.8) (30).

Results

Development of the video

The video script was developed based on the outcomes of the focus group, drawing from the recommendations of the National Stroke Foundation Clinical Guidelines. The videographer also contributed to editing, ensuring video clarity, appropriate lighting, sound, and overall user-friendliness. The videographer recorded the exercise program using a 2778 by 1284-pixel resolution at 458ppi. The video size is 14 MB, the duration is three minutes and 42 seconds, and the video quality is MPEG-4 resolution at 360 x 640. The physiotherapist in the video gave consent for it to be shared publicly. The video can be accessed online via the following YouTube link: [Online](#)

Socio-demographic and clinical variables

A total of 15 (51.7%) males and 14 (48.3%) females participated in the study (one participant did not complete the study). The mean age \pm SD of the participants combined was 52.2 ± 11.3 years. The mean age \pm SD for males and females was 49.6 ± 12.6 and 54.9 ± 9.3 years, respectively. The participant's cognitive function was good, with a mean \pm SD MOCA score of 27.8 ± 2.31 . More than half (58.6%) of the participants were married. Moreover, 48.3% of the participants were employed. Most of the participants had attained at least a college-level education (41.4%), with a small fraction having no formal education (3.4%). More than three-quarters of the patients have an ischemic stroke (69.0%) with right-sided impairment (65.5%). The mean time since the onset of stroke was 6.07 ± 7.01 months. In terms of severity, the majority of the participants have mild to moderate impairment. Ten of the participants were classified as having mild hand paresis, 16 moderate, and three severe. This classification was done based on participants' performance during the WMFT test and clinical observation, focusing on their ability to complete timed and functional tasks. There were six left-handers. Ten participants had a left-hemispheric stroke, and 19 had a right-hemispheric stroke (Table 1). Figure 2 provides a visualization of the time since the stroke.

TABLE 1 - Socio-demographic and clinical variables

Variable	Category	n (%)	Mean and SD
Age (Years)	All participants		52.21 \pm 11.309
	Male		49.67 \pm 12.68
	Female		54.93 \pm 9.32
Gender	Male	15 (51.7)	
	Female	14 (48.3)	
Marital Status	Single	2 (6.9)	
	Married	17 (58.6)	
	Divorced	6 (20.7)	
	Widowed	4 (13.8)	
Education Level	Informal	1 (3.4)	
	Elementary	2 (6.9)	
	Middle school	4 (13.8)	
	High school	10 (34.5)	
	College and above	12 (41.4)	
Employment	Unemployed	7 (24.1)	
	Employed	14 (48.3)	
	Retiree	8 (27.6)	
Type of Stroke	Ischemic	20 (69.0)	
	hemorrhagic	9 (31.0)	
Affected Side	Right	19(65.5)	
	Left	10(34.5)	
Functional Dominance	Right	23 (79.3)	
	Left	6 (20.7)	
Stroke Severity	Mild	10 (34.5)	
	Moderate	16 (55.2)	
	Severe	3 (10.3)	
MOCA	All participants		27.83 \pm 2.316
Time Since Stroke Onset (Months)	All participants		6.07 \pm 7.015
Co-Morbidities	Nil	2 (6.9)	
	Hypertension and Diabetes	9 (31.0)	
	Hypertension only	18 (62.1)	
	Diabetics	0	

MOCA: Montreal Cognitive Assessment, n = frequency, % = percentage, SD = standard deviation.

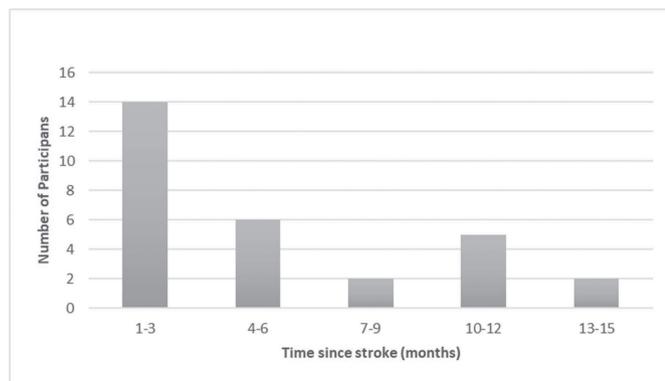


FIGURE 2 - Time since stroke.

Feasibility aspects

Acceptability

Acceptability refers to how well the intervention is received by the participants and whether they find it appropriate and suitable for their needs and circumstances (31). By the end of the study, the participants found the intervention satisfactory. They diligently followed their prescribed exercise program and even expressed interest in receiving additional video exercises and willingness to engage with and continue using the video-based TR, thus indicating high acceptability (100%).

Adherence

Adherence is simply the degree to which the participants actively choose to follow the recommendations of the intervention (32). The participants followed the intervention willingly, and no participant withdrew from the study. However, we recorded one mortality from unrelated medical issues. The participant who died was not included in the overall analysis. Thus, we recorded high adherence to the intervention with 29 participants completing the study (96.6%).

Compliance

Compliance is similar to adherence; however, the participants passively implement the intervention requirements (32). Weekly check-ins were conducted via WhatsApp to remind participants to complete their exercises, address any questions, and encourage adherence to the program. Participants received a diary with prompts to help track the frequency and duration of their exercises. The stroke survivors had a thorough understanding of the study; hence, there was maximum cooperation during the study.

Satisfaction

The participants expressed their satisfaction with the intervention and showed a remarkable score on the CSQ-8 with a mean \pm SD value of 28.6 ± 4.90 .

Comparison of the pre- and post-intervention mean scores of WMFT

Table 2 shows the change in motor function among the participants. A paired *t*-test revealed statistically significant differences in WMFT mean scores ($p < 0.001$, $d = 1.14$), with a large effect size 4 weeks post-intervention. The mean change was 8.8 points.

TABLE 2 - Comparison between pre-intervention and post-intervention mean scores of WMFT

Outcome	Pre-intervention	Post-intervention	Difference (95%CI)	t-value (df)	p-value	Effect size (d)
	Mean \pm SD	Mean \pm SD				
WMFT	41.5 \pm 14.7	50.3 \pm 14.2	8.8 (4.75–12.9)	4.44 (28)	0.0001*	1.14

WMFT, Wolf Motor Function Test; df, degree of freedom; CI, confidence interval; SD, Standard Deviation. * $p < 0.001$

Discussion

This study aimed to develop and evaluate the feasibility of an English-language, video-based TR program for stroke survivors with upper extremity impairment in Nigeria. Recommended evidence-based exercises were selected, and scripting of the video contents was done and extrapolated to the intended population. The results of the study demonstrated that home rehabilitation guided by a video-based therapy program could be an excellent alternative to conventional hospital-based therapy. It is also safe; completing therapy at home did not lead to increased stroke-related complications. Moreover, the study showed a significant preliminary improvement in the upper limb motor function. Prior studies have demonstrated the efficacy of video-based intervention in enhancing stroke recovery and indicated its practicability and acceptability for individuals with mild to moderate impairment resulting from stroke (5,12,33). However, those studies differ from the present study because the current study employed the English language medium, which is a national language in Nigeria. Moreover, the present study focuses solely on upper extremity motor function.

Ninety-six percent of the enrolled participants completed the intervention. This high adherence rate could be attributed to several possible factors, including the convenience of at-home participation and the engaging nature of the program. The video-based exercise appears to be accessible and affordable to stroke survivors, for instance, by reducing the cost of transportation and other related issues associated with face-to-face rehabilitation, which is hindered by several specific barriers. These include limited availability of rehabilitation facilities, high costs associated with in-person visits, and long waiting times for appointments. Additionally, the lack of trained rehabilitation professionals in many regions further complicates access to required services (34). Participants' satisfaction in the current study was exceptionally high, consistent with findings from previous video-based TR studies (5,35).

Following the intervention, there was a substantial preliminary improvement in the WMFT, with a large effect size

(1.14). Moreover, the change was clinically significant, with an 8.8-point increase, exceeding the 1.2-point minimal clinically important difference reported for WMFT in acute stroke (36). Based on the preexisting literature (37,38), the magnitude of change demonstrated in the present study exceeds previously reported potential practice effects. The findings of this study suggest that the improvement observed in stroke survivors is likely attributable to factors such as family support, motivation, the opportunity to engage in therapy at their preferred pace, early rehabilitation, and the familiar environment in which the therapy took place (12,39-41).

Several studies have demonstrated that a video-based therapy program conducted at home proves to be a highly effective substitute for traditional therapy conducted in hospitals (5,12,42). The findings from these studies affirm the feasibility and applicability of video-based therapeutic rehabilitation, thus corroborating the findings of the present study. Conversely, some conflicting findings are discernible in the literature. For instance, a study reported no significant improvement in WMFT following a video-based home exercise program among stroke survivors (43). This could be due to the likelihood that patients with chronic stroke may not demonstrate a significant gain in motor function recovery (44).

To our knowledge, this is the first attempt to test the feasibility and usefulness of an English language medium video-based TR program for stroke survivors with upper extremity impairment in Nigeria. However, the study has limitations. Firstly, we employed a pretest-posttest single-group feasibility design; hence, our findings should be interpreted as preliminary. Secondly, the absence of a control group and lack of randomization restrict the ability to draw causal inferences about the effectiveness of the intervention. Thirdly, the study sample was purposely selected and consisted largely of individuals with relatively high levels of education and digital literacy, which may have facilitated their engagement with the video-based TR program. This may have positively influenced their ability to engage with the intervention, thus limiting the generalizability of the findings to broader populations, particularly in underserved or low-literacy communities. Fourthly, adherence and compliance were based on self-reported data, which may introduce potential recall and social desirability biases. Finally, the scalability of the intervention in rural areas may be limited by practical constraints such as poor mobile connectivity and unreliable electricity (45). Hence, future studies should employ a rigorous study design, such as a randomized controlled trial, to robustly assess the impact of the video-based TR program.

Implications for physiotherapy practice

The results of this study provided valuable information regarding the feasibility and preliminary effectiveness of video-based therapeutic exercises. The findings suggest that video-based TR can be an effective, accessible, and probably cost-efficient supplement to traditional physiotherapy for upper-extremity rehabilitation among stroke survivors. Hence, physiotherapists should consider alternative approaches such as the use of TR to reach out to patients, for example, in resource-poor settings or during health crises. Moreover, the use of a common language while developing

TR could facilitate the understanding and assimilation of the information. However, despite the promising nature of this video-based TR, further studies are warranted to establish its broader clinical efficacy and integration into standard physiotherapy practice.

Conclusion

This study developed and evaluated the feasibility and preliminary effectiveness of an English-language video-based TR program for stroke survivors with upper extremity impairment in Nigeria. Although the findings are preliminary, they suggest potential clinical benefits. Hence, further investigation through a fully powered, randomized controlled trial is warranted to rigorously evaluate the efficacy and generalizability of this intervention, particularly among diverse patient populations in settings with greater technological barriers.

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Disclosures

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Authors' contributions: HMA, SKS, and UMB conceptualized the study; HMA collected data while SKS supervised the data collection. HMA, DS, and SKS analyzed the data. HMA drafted the initial manuscript. All authors provided critical feedback and contributed substantially to revising the manuscript, and have agreed to the present version of the manuscript.

Data availability statement: Data will be made available upon a valid request.

Ethical approval statement: We obtained ethical approval from the College of Health Sciences, Bayero University, Kano and Federal Medical Center, Jabi, Abuja, Nigeria.

Patient consent statement: We obtained informed consent from the participants prior to the study.

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