Evaluation of Counselling Materials for Hybrid Cardiac Rehabilitation in a Low-Resource Setting: Perceptions of Patients and Providers.

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ABSTRACT

Objective: This study evaluated the usefulness of a booklet as support material for counseling focused on self-efficacy and therapist interaction in the course of counseling in a hybrid CR program (i.e., supervised and unsupervised sessions) developed for low-resource settings.

Methods: Counseling material was developed by a multidisciplinary team, with patient input. Using multi-methods, first input from patients from six centers in Chile was sought through a telephone survey (cross-sectional). Second, input from physiotherapists delivering the intervention at all centres was solicited qualitatively through a focus group on Zoom. Content analysis was performed using a deductive-thematic approach.

Results: Seventy-one patients were included. All (100%) participants responded that the materials were easy to understand, contained suggestions applicable to daily life, captured their attention and was useful for future questions. The booklet overall was rated 6.7±0.6/7, and 98.2% were satisfied with the counselling. Overall themes from the six deliverers related to the CR intervention (e.g., well manualized protocols for counselling), the deliverer (e.g., expertise to deliver) and patients (e.g., found information useful).

Conclusion: The usefulness of the counseling together with the supporting booklet was established by patients and delivering professionals.

Practice Implications: Thus, with some final refinement, this resource can be disseminated for use by other Spanish CR programs.

Keywords: patient education, counseling, cardiac rehabilitation, self-efficacy, behavior change, user-centred design.

1. Introduction

Coronary diseases are among the leading causes of death and disability worldwide, particularly in lower-resource settings, which are characterized by financial pressure, underdeveloped infrastructure, environmental factors and human resources limitation [1] such as in South America [2], [3]. With advances in acute therapies, many patients are living with these diseases chronically, but they remain at increased risk of recurrent events when compared to those without established disease [4]. Therefore, secondary prevention as is delivered through cardiac rehabilitation (CR) is highly recommended [5].

Despite its benefits [6], [7], CR is globally under-available, especially in low-resource settings [8]. For this reason and also given the COVID-19 pandemic, hybrid CR models have been advocated [9]. Here, patients receive the same standard core components such as risk factor management and structured exercise [10], but many of the components can be delivered virtually using technologies [11]. Thus, once patients are stable and able, they are transitioned from supervised to unsupervised delivery of the same components.

Given high technological penetrance in the population and need, hybrid CR models should be rapidly expanded in lower-resource settings in particular [12]. In the development of our hybrid model in Chile [13], we did an environmental scan and could find no standard resources to support delivery. Therefore, we undertook a systematic process to develop evidence- and theoretically-based, patient-centered materials to support the delivery of comprehensive hybrid CR in Spanish-speaking low-resource settings.

Considering that patient education is key to enabling them to make behavioral changes, a usual intervention for patients with coronary disease participating in CR is counseling [14], which we plan to support with a booklet that was intended to reinforce the users' knowledge and

skills to optimize adherence to secondary prevention interventions [14], [15], which can positively impact their quality of life [16]. The resulting material was based on the Health Action Process Approach (HAPA), focusing on self-efficacy, which has demonstrated utility and is applicable to various health behaviors, as are needed in CR [17], [18]. Therefore, alongside the trial (HYbrid CR Trial; HYCARET) to test the efficacy of our hybrid CR model [12], this substudy aimed to evaluate the usefulness of the booklet as a support for counseling, from the perspective of patients and delivering providers.

2. Methods

A multi-method study was undertaken [19]. This involved a cross-sectional survey of patients participating in a hybrid CR intervention, and second, a focus group or interview with physiotherapists delivering it. Both sub-studies were carried out in the context of the HYCARET trial [12], and followed the Declaration of Helsinki guidelines in regard to working with human subjects. The Informed Consent form was approved by the Ethics Committee of the Universidad de La Frontera (Comité Ético Científico, CEC), and the research ethics boards at all participating centres also approved the study.

2.1. Setting and Participants

The HYCARET trial was undertaken at the following six centres in Chile: Hospital San Juan de Dios, Hospital Regional de Antofagasta, Hospital San Borja Arriarán, Hospital San José, Hospital Clínico Universidad de Chile, and Hospital Dr. Hernán Henríquez Aravena [13]. Four of these centres are in the capital Santiago, with one centre in each of the North and South of country. Hybrid CR was generally not available in the country before the trial.

While full details of trial methods are reported elsewhere [13], relevant aspects are described herein. The hybrid CR model (experimental intervention in the trial) was delivered by

a physiotherapist working at each centre. Participants included adult coronary artery disease patients (including those revascularized) who owned a mobile phone.

2.2. Counseling in the context of the HYCARET intervention

The HYCARET model comprised a first stage of 10 supervised exercise sessions for 6 weeks, plus counseling, followed by a transition to unsupervised delivery of CR. This second stage of 6 more weeks focused on supporting participants to exercise or be physically active and to comply with dietary and pharmacological recommendations via generic text messages and personalized phone calls [13].

The counseling conducted in the first stage, was designed especially for this hybrid CR model by a multidisciplinary team composed of a physiotherapist, nutritionist and psychologist, and was delivered by physiotherapists, using a booklet titled "How can I live better? Accompanying booklet for people with coronary heart disease" (in Spanish "*¿Cómo puedo vivir mejor? Manual de acompañamiento para personas con enfermedad coronaria";* excerpt in Appendix A). This booklet, protected under copyright with registration number N° 2021-A-11486 at the Department of Intellectual Rights in Chile, was designed in accordance with the HAPA model focusing on self-efficacy [17], [18] and considering practical and aesthetic aspects like fonts sizes that can be read without glasses and an abundance of images and colors to optimize use. Patient input was sought and relevant refinements were made to the booklet, as a pilot, before trial initiation. The topics covered were: about coronary disease, self-efficacy, physical activity, Mediterranean diet, tobacco cessation and adherence to drug therapy [20]**.**

Patients were given a hard copy of the 44-page pocket-sized booklet during the supervised portion of the program. Counseling was done concurrently with exercise sessions and consisted of reviewing specific content in the booklet in at least 4 of the 10 CR sessions. The

physiotherapist established a dialogue with the patients about topics addressed in the booklet, with each counseling session lasting approximately ten minutes. With this, physiotherapists aimed to increase patient self-efficacy to self-manage their lifestyle changes in each area. Intervention deliverers were trained centrally prior to trial initiation using a therapist guide titled "Counseling in healthy lifestyles: Therapist's guide and use of the accompanying booklet" (In Spanish "*Consejería en estilos de vida saludables. Guía para el terapeuta y uso del manual de acompañamiento"),* work also protected under copyright, with registration number N° 2021-A-11608 at the Department of Intellectual Rights, Chile).

2.3. Patient Evaluation of the Counseling Intervention and Materials

2.3.1. Study design and procedure

A cross-sectional study was carried out with willing HYCARET intervention participants. First, participants responded to a survey on the usefulness of the accompanying booklet immediately after the intervention. Then, 3 to 6 months after the intervention, a telephone survey was conducted to ask about the counseling intervention.

2.3.2. Measures

The survey on the usefulness of the booklet was self-completed by the participant as it was included as the last page of the material. This survey had 9 questions with the possibility to respond on a 5-level ordinal scale from "Strongly Disagree" to "Strongly Agree" and two open-ended questions with suggestions for improvement or other feedback were included. The telephone survey, undertaken by a professional trained for this exclusive role in the study, had 12 questions, one about whether they reviewed the booklet after the intervention was completed (response options: yes/no), and the remainder related to the interaction with the therapist during counseling. Response options were "yes", "no" or "I don't remember" for 8 questions, and

"always", "almost always", "sometimes" or "never" for the remaining 3. Finally, one overall rating on a scale from 1 to 7 (a higher score is better). Items were drafted by the research team and piloted with several patients and are presented in Table 1.

2.3.3. Data analysis

A descriptive analysis was performed on the characteristics of the sample. Then the responses given in the telephone survey were described, reporting the frequency and percentage, for which JASP version 0.14 software was used.

2.4. Provider Evaluation of the Intervention Materials

2.4.1. Design and procedure

A qualitative approach was applied, through a focus group with all available intervention deliverers from all centres at the end of the trial intervention. Physiotherapists who were not available answered a questionnaire interview style based on the focus group guide with open-ended responses. The semi-structured guide started with queries to explore overall perspectives on the intervention and the materials to support delivery, then covered the counselling experience, followed by each topic.

The focus group was held through the Zoom platform, with the session recorded and transcribed. It lasted 60 minutes, and was led by a psychologist skilled in qualitative data collection.

2.4.2. Data analysis

The Zoom transcription was checked against the video-recording, with edits made to ensure accuracy and anonymity. Analysis was then performed of the transcript as well as the responses from the physiotherapists who could not participate using the Atlas.ti version 9 software. A

deductive-thematic approach as outlined by Crabtree and Miller was used [21], [22], whereby participants' statements were coded into major themes and subthemes.

3. Results

3.1. Patient Perceptions of the Counseling

Seventy-one participants (76% of those in the experimental arm of the trial) participated (Table 2). All (100%) participants rated the intervention materials were easy to understand, contained suggestions applicable to daily life, captured their attention, were important for the treatment, that they would recommended it for other people with coronary disease, and was a useful reference for future questions. Almost all participants (96%) reported the intervention enabled them to know much more about their disease and treatment and helped them to understand more about their disease, was well designed in terms of colors and figures, as well as was understandable in content. In addition, 69% of the participants stated that they had reviewed the booklet after the face-to-face exercise sessions. The overall rating for the intervention materials was 6.7±0.6/7. The only suggestions for improvements were that: the materials could include even more content or that it should go into more detail or suggest further reading, and that the font size should be larger.

Regarding the counseling interactions with the therapist, participants recalled dialogue on each topic contained in the booklet 94.8% of the time, with 98.2% of the participants rating the booklet as useful in supporting the counselling dialogue. Additionally, 93.0% rated the amount of time dedicated to counselling as adequate. Almost all participants (98.2%) reported the counselling was delivered in an atmosphere of trust, and that their questions were always answered. Finally, 98.2% of the participants declared that they were satisfied with the counseling.

3.2. Provider Perceptions of the Counseling

Six therapists participated in the focus group or responded to the questionnaire interview. The analysis process resulted in three themes with 44 sub-themes (see Figure 1): (1) CR intervention factors; (2) deliverer factors, and (3) patient factors.

With regard to the intervention-related factors, the availability and quality of the supporting materials for patients were considered enablers of intervention success. The materials were considered to have high educational value, and to bolster information delivered verbally. The materials were considered high-quality in terms of content, clarity and accuracy.

With regard to deliverer-related factors, the physiotherapists deemed their professional discipline training to be an asset supporting implementation of the intervention. This equipped them with the broad knowledge needed to cover the various topics in the intervention needed to ensure comprehensive secondary prevention. However, they expressed they had less knowledge in the areas of nutrition and self-efficacy. Here, they did not feel confident expanding beyond what was in the booklet, and also were concerned the patients would become aware they lacked proficiency in the area of diet.

Finally, with regard to patient-related factors, overall the providers reported the participants were adherent to the CR recommendations and program, and were highly motivated. They reported how much education the patients needed, and hence how useful the booklet was. However, some patients did not review the booklet prior to scheduled sessions, or have it available for consultation during the session. This is important as some elements are measured and recorded in the booklet such as self-efficacy, which there was some difficulty assessing at the beginning of the intervention. On a related note, the providers raised that there may have been social desirability bias in patient reporting of self-efficacy, as well as their heart-health

behaviors. Finally, they suggested that perhaps time for counselling be set aside before or after the exercise.

4. Discussion and Conclusion

4.1. Discussion.

In conjunction with a controlled trial, this study evaluated, from the perspective of patients and delivering professionals, the utility of Spanish counseling delivered in a hybrid CR intervention designed in a low-resource setting. Given results from this evaluation were generally supportive, the findings herein can inform refinement of the intervention, so that HYCARET materials could then be disseminated for use more broadly.

The benefit of psycho-education in CR is well-established [23]. There have been some other studies reporting on the development of CR patient education (but not counselling) and evaluation in the literature, but these have not been for hybrid models nor specific to low-resource settings [24]–[26]. Learning from this research includes the importance and value of tailoring education to the socio-cultural context of a resource-poor environment, as well as to the information and health literacy needs of patients. In the current study, patients agreed that the booklet design was attractive, captured their attention and used language that allowed them to understand the content. Also, they indicated that it was an important element of their treatment as it supported them in formulating questions, learning about their disease and contained suggestions that they could apply to their daily life; all of which increased their motivation to participate in the intervention. These elements are important considering that the counseling was carried out by only one professional, reducing costs in human resources, while at the same time, it was done in a personalized manner taking advantage of the opportunity provided by the

supervised exercise sessions and using the booklet that provided alternatives for adopting a healthy lifestyle, which does not always happen in the group education sessions.

There are several implications of this research, of relevance to hybrid CR delivery in all settings and languages. Chief among them is the need to consider optimal timing of counselling and education delivery in relation to exercise sessions. On average globally, supervised CR sessions are one-hour in duration, with the education and counselling before or after the exercise [27], but patients have time constraints and dropout rates are too high [28]. Duration of counselling in unsupervised CR is not well-characterized. Second, CR is generally delivered by a multidisciplinary team, although this is less feasible in low-resource settings [12], and is less common with unsupervised delivery. Thus, there was no comprehensive psychosocial component to the intervention, despite its benefits [29], with patients referred out for mental healthcare where severity warranted. Moreover, the physiotherapists reported they perceived they had insufficient expertise to deliver the nutrition component, which can be addressed with training of therapists or patient referral where possible. Certainly, further resources could be provided at the end of the booklet for interested patients to read on nutrition or stress management for instance, as requested by participants; this would be feasible in low-resource settings.

Finally, intervention deliverers were concerned about socially-desirable responding on behalf of patients, and that some patients did not read the materials. This is certainly not an issue unique to this intervention [30], but again is applicable to all of CR. Preliminary results of the larger trial suggest that diet and exercise behavior was equivalent in the intervention and traditional CR arms, allaying this concern (in preparation).

This study was not without limitations. The first of these is that it is descriptive in scope, and hence causal conclusions cannot be drawn. The sub study was undertaken within the context of a randomized trial, and hence generalizability was not the focus, however it was a multi-centre trial of 6 centres. Nevertheless, generalizability of findings to other CR centers with Spanish as a first language in low-resource settings is not known. Another limitation is social desirability, which may have influenced the participant's responses, since those who participated in this study benefitted by receiving the intervention, so when reporting their opinions, they may have been less critical.

4.2. Conclusion.

This descriptive study contributes multi-source evidence supporting the usefulness of counseling and associated materials in a hybrid CR program in a low-resource setting. These materials were positively received by patients and delivering providers alike. However, there are aspects that can be improved, such as providing further resources and considering the timing of delivery.

4.3. Practice Implication.

With some final refinement, and considering the clinical context of the CR program, this resource can be disseminated for use by other Spanish CR programs in low-resource settings, in order to augment counseling coverage.

Availability of materials created and evaluated in this study: Both the booklet and the therapist's guide can be requested by e-mail to the corresponding author. Samples are also available in the Supplementary Material.

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Table 1. Survey on the usefulness of the booklet

Questions or statements	Answer options	Administration
Booklet evaluation		
It is easy to understand the contents that the booklet teaches me	Strongly disagree to strongly agree	Self-completed survey
I consider that the booklet will be useful for me in the future when I have any doubts		
I think the booklet is well presented, it uses colors and figures that I like		
I would recommend a person with heart disease to read this booklet		
This booklet has been important for my treatment		
The booklet captures my full attention when I read it		
The suggestions in the booklet can be applied to my daily life		
I can clearly understand the concepts used in the booklet		
I find this booklet allows me to learn much more about my disease and treatment		
If you had to make a suggestion or change to this booklet, what would it be?	Open-ended questions	
If you had to give a grade to this booklet, where 1 corresponds to the lowest grade and 7 the highest grade, what grade would you give it?		
After the face-to-face sessions have you reviewed the booklet again?	Yes, no, I don't remember	Telephone survey
Counseling evaluation		
During your exercise sessions, your therapist discussed with you regarding:	Yes, no, I don't remember	Telephone survey
Your condition (or disease)		
The importance of self-efficacy		
Drug adherence		
Healthy lifestyles: Physical activity		
Healthy lifestyles: Healthy eating		
Healthy lifestyles: Smoking		
Was the booklet useful to support the dialogue within the session?		
In relation to the counseling or dialogue held with the therapist regarding the issues identified above, do you consider that:		
The time commitment was adequate	Always, almost always, sometimes and never	
It was conducted in an environment of trust		
He was able to solve all his doubts		
Are you satisfied with the counseling?	Yes, no, I don't remember	

Table 2. Sociodemographic and clinical characteristics of patient participants, N=71

Characteristics	**% (n) / mean (SD)**
Sociodemographic	
Sex, % (n)	
Men	73 (52)
Women	27 (19)
Age, mean (SD)	58 (9.9)
Work status, % (n)	
Yes	42 (29)
Civil status, % (n)	
Married	60 (41)
Single	17 (12)
Divorced	10 (7)
Separated	6 (4)
Widower	6 (4)
Cohabiting	1 (1)
Highest educational attainment, % (n)	
University	14 (10)
Technical school	17 (12)
Secondary / High school	35 (24)
Primary education	20 (14)
Incomplete primary education	13 (9)
Clinical	
*CR indication** % (n)	
Acute coronary syndrome	75.7 (53)
Percutaneous coronary intervention	77.1 (54)
Coronary artery bypass graft surgery	31.3 (22)
Other	17.1 (12)
Risk Factors	
BMI, mean (SD)	28.4 (3.9)
Tobacco Use, % (n)	7,1 (5)
Diabetes, % (n)	28 (19)
Hypertension, % (n)	75 (51)

BMI: Body Mass Index; SD: Standard deviation; CR: cardiac rehabilitation
**all that apply*

Fig. 1: Results of the focus group with physiotherapists