international medical education

MDPI

Article

Follow-Up of Post Myocardial Infarction Using Telemedicine: Stakeholders' Education, Results and Customer Satisfaction

Manuela Bocchino [1,2,*], Francesco Gabbrielli [1], Guglielmo Pastena [2], Nicola Danisi [2], Fabio Ferranti [2], Raffaele Scardala [2], Mariagrazia Romano [2], Claudia Sorrentino [2] and Fabrizio Ammirati [2]

[1] National Centre for Telemedicine and New Healthcare Technologies, Italian National Institute of Health, ISS, 00161 Rome, Italy
[2] Cardiology Unit, Department of Medicine, G.B. Grassi Hospital, ASL Roma 3, 00122 Rome, Italy
* Correspondence: manuela.bocchino@iss.it

Abstract: Background. There are few studies about post myocardial infarction follow-up using telemedicine. We organized a post-discharge telemedicine service with a dedicated team. To do this, it was necessary that all stakeholders involved in the organization and use of the telemedicine service were properly educated and informed. **Methods.** We designed a theoretical–practical mini-course to train healthcare personnel and increase skills, with excellent learning outcomes and satisfaction. Thereafter, we enrolled patients affected by acute myocardial infarction with ST elevation (STEMI), MINOCA (myocardial infarction with no obstructive coronary atherosclerosis), Takotsubo syndrome or spontaneous coronary dissection, and high-risk acute myocardial infarction without ST elevation (NSTEMI). At discharge, the cardiology technician performed counselling for the patient, using regional platforms, such as televisit, at 1 and 4 months, allowed us to monitor major adverse cardiac events (MACE), heart failure, arrhythmias, unstable angina and non-cardiovascular events, therapy adherence, target therapy and customer satisfaction. **Results.** Between November 2021 and February 2023, we enrolled 110 patients: 72% affected by STEMI, 22% by NSTEMI. At the 1-month follow up, 12 patients did not reach the pressure target and 23 patients did not reach the LDL target. We observed three patients requiring hospital readmission, three requiring hospital visits for further investigation, and one death. To date, a four month follow up was performed for 54 patients. No readmissions or deaths occurred. We detected a rate of 96% of customer satisfaction. **Conclusions.** A health coordination center with a dedicated team makes televisit safe as a follow-up for post-myocardial infarction patients. Beforehand, it is fundamental for healthcare professionals to acquire theoretical knowledge and updates, and the acquisition of manual, technical and practical skills.

Keywords: education; televisit; telecounselling; post-myocardial infarction; follow up; customer satisfaction

Citation: Bocchino, M.; Gabbrielli, F.; Pastena, G.; Danisi, N.; Ferranti, F.; Scardala, R.; Romano, M.; Sorrentino, C.; Ammirati, F. Follow-Up of Post Myocardial Infarction Using Telemedicine: Stakeholders' Education, Results and Customer Satisfaction. *Int. Med. Educ.* **2024**, *3*, 1–11. https://doi.org/10.3390/ime3010001

Academic Editor: Hideki Kasuya

Received: 9 November 2023
Revised: 7 December 2023
Accepted: 19 December 2023
Published: 20 December 2023

1. Introduction

In the last few years, acute myocardial infarction (AMI) hospitalization decreased, due to the action of primary prevention, reaching a total volume of 123,327 admissions since 2019 in Italy [1]. Such patients need a follow up to check for symptoms, adherence to therapy and achievement of therapeutic targets. The increasing demand for outpatient services and the concomitant pandemic from SARS-CoV2 accelerated the creation and the implementation of telemedicine services. In the literature, several studies investigated the usefulness of telehealth for risk factor modification, medication adherence, and symptoms monitoring in coronary artery disease [2]. Some examples are monitoring and improving blood pressure and lipid levels, encouraging exercise and dietary changes, and counseling toward smoking cessation through telephone calls, short message service texts, and online portals. But we still find few experiences with a follow up of post-myocardial infarction using telemedicine, which is the remote delivery of healthcare services, such as health assessments or consultations, to evaluate, diagnose, and treat patients. A study by Zhang

et al., published in 2021 and concerning 288 patients hospitalized for ST elevation myocardial infarction (STEMI) during the period of the COVID-19 pandemic, reported that, in such patients, followed mostly in telemedicine, there was an increased adherence to therapy with better long-term prognosis (1 year follow up) [3]. Previously, in 2019, Spaulding described a digital health intervention developed by Johns Hopkins, the Corrie Health Digital Platform (Corrie), which included the first cardiological smartphone application Apple Care Kit, combined with an Apple Watch and a blood pressure bracelet equipped with Bluetooth. Corrie's goals were the self-management of cardiac drugs, self-tracking of vital signs, education about cardiovascular diseases through animated articles and videos, and coordination of care including outpatient follow-up visits. This is an example of a self-management tool in post-myocardial infarction [4]. Kamel and colleagues divided two hundred patients admitted for STEMI and primary angioplasty (PCI) into two groups: a hundred patients in the study group received a monthly telecontrol using a smartphone application for 3 months, from 1 week after discharge, and at least one clinical visit in attendance. At the end of the course, there was no significant difference between the groups in terms of major cardiovascular events and adherence to therapy in general; however, patients in the study group showed better adherence to taking certain medications, smoking cessation and cardiac rehabilitation [5]. The IMMACULATE trial also showed that among low-risk patients with revascularization after myocardial infarction, remote monitoring by healthcare professionals is feasible and safe [6]. Another study aimed to assess the effects of telenursing on patients' activities of daily living and instrumental activities of daily living following a myocardial infarction, suggesting that the use of telenursing intervention may increase these activities and may enhance patients' independence [7].

So, the aim of this study was to demonstrate the possibility of taking over the patient discharged with diagnosis of acute myocardial infarction in a complete way and from a medical and nursing point of view, using telemedicine; subsequently, we organized a post-discharge telemedicine service with a dedicated team.

At the same time, however, it was essential that all stakeholders involved in the organization and use of a telemedicine service were properly educated and informed. In Italy, for example, in May 2021, a survey carried out by the Osservatorio Innovazione Digitale in Sanità of the Politecnico in Milan showed that doctors using telemedicine are only 30%, digital literacy (basic digital skills and the use of digital in daily life) affects 60% of operators, but only 4% have e-Health competences, which is a satisfactory level in all areas of professional digital skills [8].

Things do not change if we analyze the so-called 'digital natives': SIGM (Segretarate Italian Young Doctors) studied the 'Millennials' or under-35s through the VALIDATE project ("VALues In Doing Assessments of health TEchnologies"). The results showed that 13% directly manages big data in clinical and research practice, 13% uses artificial intelligence in their area of interest and 22 and 34%, respectively, has a direct and indirect involvement in telemedicine [9].

From here, educating the sanitary staff and supplying the necessary competences is necessary [10]:

1. Clinical: clinical experience must be combined with technology to make clinical decisions at a distance to understand non-verbal and verbal remote expressions or to carry out objective examination in a telehealth environment [11];
2. Technological: use of the necessary technology and ability to guide the patient to the use of the necessary technology, what to do when the technology does not work, and handle digital patient data for clinic and research [12,13];
3. General: adherence to ethical, regulatory and procedural norms, knowledge of best practice, knowledge of limits of telehealth, organization and coordination of the team, communication (empathy and support during the session) [14,15].

2. Materials and Methods

2.1. Setting and Design of Stakeholders' Education

Concerning medical education to ensure that the telemedicine service and the path for ischemic heart disease patients worked, we collaborated as editors in the drafting of a Corporate Act by the Health Directorate and General Directorate of the Local Health Department for the specifics of the organization and implementation of the televisit procedure. In particular, we designed a theoretical–practical mini-course to train healthcare personnel and increase skills, entitled "e-Health, telemedicine and services—televisit: theory and practice". The program included notions of a theoretical nature to know the new type of service and the relevant legislation, but above all practical, with telesimulations, to give the opportunity to do field exercises and make it easier to carry out the new service.

The course met two training needs: the acquisition of theoretical knowledge and updates and the acquisition of manual, technical and practical skills; it was aimed at doctors, nurses and technicians, for a maximum of 50 participants per edition. The educational objective was to start the televisit service or implement it, where already present, improving performance. The program of the training event, lasting 4 h, included three sessions: the first dedicated to definitions, procedural and regulatory rules, the second dedicated specifically to televisit and the third to practical telesimulations. The first two sessions were held through lectures, the last through practical technical demonstrations. Specifically, the course program was structured as described in Table 1.

Table 1. Course program.

1° Session	**Duration**	**DEFINITIONS, REGULATORY RULES AND PROCEDURES**	
From 9.00 to 10.00	1 h	**Details**	**Teaching Methodology**
from: h 9.00 to: h 9.20	20 min	e-Health	lectures
from: h 9.20 to: h 9.40	20 min	Telemedicine: Guidelines and consensus documents, Decentralized Clinical Trial	lectures
from: h 9.40 to: h 10.00	20 min	Televisit: the regional indications and the Corporate Deliberation	lectures
		BREAK	
2° Session	**Duration**	**TELEVISIT**	
From 10.15 to 12.15 P.M.	2 h	**Details**	**Teaching Methodology**
from: h 10.15 to: h 10.35	20 min	The first step: deciding which performance, organizing and coordinating the team	lectures
from: h 10.35 to: h 10.55	20 min	The team: doctor, nurse, technician, . . . necessary skills and roles	lectures
from: h 10.55 to: h 11.15	20 min	SISMED surgery operation implemented	lectures
from: h 11.15 to: h 11.35	20 min	SISMED surgery operation implemented	lectures
from: h 11.35 to: h 11.55	20 min	The necessary ratings for staff: what requests and to whom	lectures
from: h 11.55 to: h 12.15	20 min	Patient information and information examples (brochure)	lectures
		BREAK	

Table 1. *Cont.*

3° Session	Duration	TELESIMULATION	
From 12.30 to 13.40	70 min	**Details**	**Teaching Methodology**
from: h 12.30 to: h 13.30	1 h	Reproduction of some clinical simulations on televisit	practical technical demonstrations
from: h 13.30 to: h 13.40	10 min	LEARNING TEST	

The learning test was made through a questionnaire including 16 questions, indicating a threshold of acceptability beyond which what was considered for passing the test, 75%. A satisfaction questionnaire was distributed at the end of the course too.

Fifty health workers took part in our course, obtaining a positive outcome to the learning test; moreover 98% expressed a positive opinion to the satisfaction questionnaire; 2% did not reply.

2.2. Setting and Design of the Study

As for our study, this was a prospective single-center observational cohort study, using real world data (RWD) and telemedicine. The procedures adopted were in accordance with institutional guidelines. We selected the following patients:

(a) Patients admitted for acute myocardial infarction with ST elevation (STEMI) and undergoing primary angioplasty,
(b) Patients with myocardial infarction with no obstructive coronary atherosclerosis (MINOCA) or Takotsubo syndrome or coronary dissection,
(c) Patients with no ST elevation myocardial infarction (NSTEMI).

All patients must have digital skills or a caregiver with digital skills. For these patients, we programmed a follow up through televisit 1 and 4 months after hospital discharge. We designed this service since early 2020, taking into account four key aspects:

1. The clinical need of the patients of periodic follow-up for ischemic heart disease;
2. Many patients' difficulties in reaching the hospital;
3. The availability of new types of dedicated technologies and telemedicine services, according to current regulations.

In particular, for the post myocardial infarction follow up, we selected televisit according to the definitions indicated by the National Guidelines [16], which also established a system of rules, specifying the televisit charging system as the existing remuneration for the traditional mode.

In order to obtain a good organizational effectiveness, a multidisciplinary team was created: the team consists of two dedicated cardiologists, two nurses and two cardiology technicians, with clinical and digital skills, supported by digital healthcare applications, according to literature models [17]. We also followed indications regarding the Lazio Region Guidelines [18,19] and, from a practical point of view, the outpatient organization included a path already published in the literature [20]. A specific schedule has been made, with each televisit having a 40-min runtime.

Methods for recruitment:

1. The cardiology technician checked the appointment for televisit at 1 month and delivered the vademecum to the patient with the details of the appointment signed by the doctor responsible for telemedicine, and explained to the patient the methods, details and clinical advice for the achievement of therapeutic targets; at the same time, a written patient consent for data treatment using telemedicine was collected. It is important to note that we were able to do this counselling also using telemedicine, meaning that the technician performed a telecounselling (or teleassistance) with a video call to explain the previous ones to the patient. It is also important to note that to

improve a patient's literacy level for the adoption of such telemedicine programs, we prepared a brochure to be delivered to the patient with the indications on the activities that would have been carried out, and our healthcare company has proceeded to insert on the institution's website the basic indications to be given to the patient for the use of telemedicine.

2. The discharging cardiologist included the appointment in the letter.

During the televisit:
The cardiologist provided:

(a) Evaluation of symptoms, self-control parameters (blood pressure, heart rate) and blood chemistry vision;
(b) Lifestyle check (diet, smoking, physical activity, etc.);
(c) Check of the adherence to dual antiplatelet therapy (DAPT) and prescribed therapy with evaluation of any side effect;
(d) Televisit reporting, programming any instrumental surveys and subsequent programming control on televisit to 4 months;

The cardiology technician provided:

(a) Entering the related database;
(b) Calling subsequent patients for telecounselling.

2.3. Data Collections

We collected data using an Access database. Data on demographic and clinical characteristics were collected from the electronic medical records by cardiology technicians during the recruitment and counselling of patients. These included personal data, past medical history, cardiovascular risk factors, presentation type, angiographic data, and time spent in hospital, complications during admission and medications on discharge. Likewise, during follow-up televisits, parameters of self-control, symptoms, blood chemistry and medications were collected. Blood chemistry included LDL cholesterol, hemoglobin (Hb) and blood glucose; parameters of self-control included systolic blood pressure and heart rate. Guideline-directed medical therapy for acute coronary syndrome (ACS) in accordance to the European Society of Cardiology (ESC) [21] and American College of Cardiology/American Heart Association (ACC/AHA) [22] guidelines was prescribed.

2.4. Study Outcomes

We collected all study outcomes during the 1st month and 4th months follow-up from the discharge date. The primary safety outcome was a composite outcome of all-cause mortality, myocardial infarction, stroke and coronary revascularization (major adverse cardiovascular event—MACE); the secondary safety endpoints were heart failure, arrhythmia, unstable angina and non-cardiovascular events. Efficacy outcomes were an adherence to the prescription of guideline-directed medical therapy and cardiovascular risk factors control (systolic blood pressure, LDL, and blood glucose), and customer satisfaction.

2.5. Statistical Analyses

We described categorical variables as percentages and continuous variables as a mean with standard deviation (SD).

3. Results

3.1. Baseline Characteristics (Table 2)

Between November 2021 and February 2023, we enrolled 110 patients (80% males, 20% females); the average age was 65 $\pm$ 12 years. As for coronary risk factors, we registered hypertension in 71.8% of patients, diabetes in 21%, dyslipidemia in 84.5%, cigarette smoking in 49% and familiarity for ischemic heart disease in 27% of them. The admission diagnosis was STEMI in 72% of patients, while 22% were affected by NSTEMI and 6% by other pathologies taken in consideration, as MINOCA and Takotsubo syndrome or coronary

dissection; among STEMI patients, the myocardial site was anterior in 35%, inferior in 33%, 10% anterior–lateral and 10% inferior–posterior, other sites in the remaining cases. All performed coronary arteriography and 98% was treated with coronary angioplasty; among them in 44% of cases, the interventricular artery was treated, in 24% the right coronary artery and in 15% the circumflex artery. The length of stay in hospital was 8 ± 3 days, all patients performed echocardiography and the left ventricular ejection fraction at discharge was, on average, 53.2 ± 9%. During the hospital stay, five patients experienced non-sustained ventricular tachycardia at ECG monitoring, which was solved with beta blocker titration; one patient had acute decompensation, solved with adequate therapy; and one experienced transitory atrio-ventricular block without necessary pacing.

Table 2. Baseline characteristics of study participants.

	Total (n = 110)
Demographic	
Age, years	65 (12)
Sex, female	22 (20)
Medical history	
Hypertension	79 (71.8)
Diabetes	23 (21)
Dyslipidemia	93 (84.5)
Family history of premature ischemic heart disease	54 (49)
Smokers	30 (27)
Admission	
STEMI	79 (72)
Anterior	28 (35)
Inferior	26 (33)
Anterior–lateral	8 (10)
Inferior–posterior	8 (10)
Other sites	9 (12)
NSTEMI	24 (22)
MINOCA or Takotsubo syndrome or coronary dissection	7 (6)
Complications during admission	7 (6)
Non sustained ventricular tachycardia	5
Heart failure	1
Transitory atrio-ventricular block	1
Length of stay, days	8 (3)
LVEF on discharge, %	53.2 (9)
Coronary arteriography	110 (100)
Coronary angioplasty	108 (98)
Interventricular artery	48 (44)
Right coronary artery	26 (24)
Circumflex artery	16 (15)
Others	18 (17)

Categorical data presented as n (%). Continuous data presented as mean values (standard deviation). STEMI, acute myocardial infarction with ST elevation; MINOCA, myocardial infarction with no obstructive coronary atherosclerosis; NSTEMI, acute myocardial infarction without ST elevation; LVEF, left ventricular ejection fraction.

3.2. Safety and Efficacy End-Point at One-Month Follow-Up Televisit

The characteristics of study participants during the follow-up are shown in Table 3.

Table 3. Safety and efficacy end-points during 1-month follow-up and 4 months follow-up.

	1-Month FU (n = 110)	**4 Months FU (n = 54)**
MACE	1 (0.9)	0
Heart failure	0	0
Arrhythmia	1 (0.9)	0
Unstable angina	0	0
Thoracic pain	0	1 (2)
Dyspnea	8 (7)	6 (11)
Palpitations	8 (7)	3 (5.5)
Non-cardiovascular events	3 (2.7)	0
Hospital readmission	3 (2.7)	0
In hospital visit	3 (2.7)	0
Adherence to prescriptions		
DAPT	110 (100)	54 (100)
Statin	106 (96)	54 (100)
Risk factors control		
SBP target	98 (89)	52 (96)
Average SBP (mmHg)	122 (13)	117 (8)
LDL target	87 (79)	49 (91)
Average serum LDL (mg/dL)	49 (22)	74 (56)
Stop smoking	23 (77, n = 30))	23 (92, n = 25)

Categorical data presented as n (%). Continuous data presented as mean values (standard deviation). FU, follow-up; MACE, major adverse cardiovascular event; DAPT, dual antiplatelet therapy; SBP, systolic blood pressure; LDL, low density lipoprotein.

3.2.1. Primary Safety Outcome

We registered one sudden death 3 weeks after discharge: he was a middle-aged male with all risks factors except diabetes, who underwent multivessels angioplasty for a NSTEMI and with a mild reduction of left ventricular ejection fraction.

3.2.2. Secondary Safety Endpoints

We observed three patients requiring hospital readmission. One patient had an admission for acute anemia (Hb 6 g/dL) with melena. He underwent blood transfusions and was subjected to a gastrointestinal endoscopy that demonstrated hemorrhagic gastritis, so that antiplatelet therapy was reduced and gastric protection augmented. Another patient experienced severe gastrointestinal bleeding too. She had been discharged with dual antiplatelet therapy along with anticoagulant therapy. The gastrointestinal endoscopy revealed colon diverticulosis and, in this case, therapy was also reduced. Finally, one patient presented a systemic allergy, probably alimentary related. Three patients required an in hospital visit to perform an electrocardiogram (ECG) for referred palpitations, but the ECG revealed sinus rhythm, echocardiography for referred dyspnea, without the worsening of left ventricular ejection fraction, and blood sampling for paleness witnessed during the televisit (which revealed Hb 6.9 g/dl, this is the same patient with gastrointestinal bleeding). Some cases of hypertension, hypotension, bradycardia and worsening of renal insufficiency were successfully treated at a distance, as far as the necessity of changing therapy or prescription and vision of instrumental examinations performed.

3.2.3. Efficacy Outcomes

Adherence to prescription of guideline-directed medical therapy was confirmed, above all for dual antiplatelet therapy; four patients interrupted statins due to muscular pain. As for cardiovascular risk factors control, 12 patients did not reach the pressure target, so that therapy was optimized; 23 did not reach the LDL target, where four of these suspended statins themselves, and as for the others, therapy was optimized; and seven patients continued smoking.

3.3. Safety and Efficacy End-Point at Four Months Follow-Up Televisit

To date, a four month follow up was performed for 54 patients only.

3.3.1. Primary Safety Outcome

No readmissions, deaths and in hospital visits occurred. Hypertension, hypotension, bradycardia, or other symptoms were successfully treated at a distance too, as well as therapy prescription and prescription and vision of instrumental examinations performed.

3.3.2. Efficacy Outcomes

Adhering to the prescriptive guideline-directed medical therapy was confirmed. As for cardiovascular risk factors control, two patients did not reach the pressure target, five did not reach the LDL target, so that therapy was optimized, and two patients continued smoking.

3.4. Customer Satisfaction

Finally, we detected a rating of 96% in customer satisfaction; 1% reported no preferences between televisit or in hospital visit. Few patients reported that they preferred an on site visit due to the lack of human contact with the doctor. The majority of patients referred to be satisfied not only with the televisit itself and the possibility to talk with the doctor and exchange data without moving from home, but also with the technicians' counselling and contact at a distance to improve self-management of their diseases.

4. Discussion

This study examined real-world data in using telemedicine on standard follow-up care and evaluations of outcomes among post myocardial infarction patients after hospital discharge. The health professionals who participated in this project followed a preliminary training course to acquire skills and to be able to adequately perform the telemedicine services.

We can underline some important findings. Achieving medication target doses and guideline-directed medical therapy, as far as the risk factors control during follow-up, is important to reduce the risk of MACE. Telemedicine uses technological innovations and devices capable of giving support and care at a distance. Therefore, it is possible to detect and correct poor adherence to pharmacological and non-pharmacological therapy, and then stimulate early therapeutic interventions or appropriate behavioral changes. Particularly, a televisit makes it possible to exchange real-time clinical data, medical reports, images, and audio–video, all relating to the patient; the doctor can share the findings, proceed with the prescription of further investigations or therapies, send the report of the televisit and enter the patient's data in the collection database. Telenursing by health professionals (nurses and technicians) helps in this management too: they can perform patient and caregiver education on adherence, medications, and lifestyle behaviors, suggestions about a heart-healthy diet and exercise, and, finally, also the counselling itself on how the televisit is going to play out and how the patient will obtain the report.

Many trials have shown the improvement of patient education, medication adherence, and lower mortality, reduction of hospital admissions, the improvement of quality of life and the reduction of healthcare costs with the use of telemedicine [23,24]. At the same time, we know that patients require closer monitoring post-myocardial infarction [6]. Moreover, the European Society of Cardiology recommended the development of specific training programs for patients, caregivers and professionals to acknowledge capabilities and limitations of telemedicine [25].

Another important factor emerging from this work is that telemedicine requires teamwork. For a telemedicine service, it is fundamental to have active collaboration between the different professional figures of the multidisciplinary team (cardiologist, nurse and technician of cardiovascular physiopathology), which must necessarily collaborate and contribute to the success of the patient's care path. To do this, however, it is necessary

that all operators are adequately educated from the theoretical and practical point of view; they have to know the advantages of these performances, but also the limits, and they can therefore be able to overcome and promptly resolve them. They must be trained to inform the patient adequately to overcome any mistrust or difficulties with technology and new procedures.

As suggested by interesting work of the Mayo Clinic [26], it is necessary to avoid the unsafe "doctor-does-it-all" model: staff should provide this support whether the visit is in person or virtual. It is necessary to plan the activities of the center and to plan a personalized path for each patient. Patients must be supported in gaining familiarity with the technology, there must be precise rules on 'who does what', and to simplify work, e.g., setting up and starting before physician involvement, there must be a telemedicine health operative center.

Finally, we found few works in the literature about customer satisfaction using telemedicine, for example, regarding services using telemonitoring and teleconsulting [27], a satisfaction questionnaire to measure health care professionals' satisfaction [28], a specific questionnaire to assess the quality of the service and the patient satisfaction [29] or using telehealth platforms managed by nurses [30]. To our knowledge, there are no data about televisit and telecounselling in post-myocardial infarction patients; this study examined the users' satisfaction, reporting the majority of patients being satisfied not only with televisit itself, but also with the technicians' counselling and contact at a distance to improve self-management of their diseases.

5. Conclusions

These RWD showed that post myocardial infarction patients follow-up with telemedicine is feasible, using both televisits that allow the possibility to talk with the doctor and to exchange data without moving from home, and teleassistance or telecounselling, the nurses' and technicians' distanced contact to improve self-management of patients' diseases and to help them in performing all telemedicine activities.

Televisits are safe in the follow up of these patients; we treated many cases successfully from distance, as far as the necessity of changing therapy or prescription and the vision of instrumental examinations performed. It helps in promoting adherence to the prescriptive guideline-directed medical therapy and in reaching targets in cardiovascular risk factors.

The approval rate was high, with few patients preferring in office visit, but we observed the possibility in easily converting televisits into face-to-face evaluations or rehospitalization, if necessary, to manage some adverse events.

These services were possible through the structuring of a health coordination center with a dedicated team, which also supported patients with counselling in the new path. But it was also possible thanks to the educational path carried out for health professionals, because it certainly made them more competent in the field of telemedicine and more prepared to build new paths according to the need of the patient, patient involvement and team collaboration.

6. Limitations

There were some limitations in our study. As mentioned, this is a prospective single-center observational cohort study, using RWD and telemedicine, and it reflects the current follow-up method used by the cardiology unit; this is why we have not used a control group using traditional follow-up methods. Moreover, to date we still have a small sample size of enrolled patients. Finally, looking at our patients' population, we noted very few complications during admission, so that it did not seem a high risk population, making remote follow up probably easier and safer. This may indicate a category of patients where the use of telemedicine is safe and effective, thus selecting the population to be followed with this method of follow up, while those at higher risk could be evaluated in person. As far as education is concerned, the course was unique for doctors, nurses and technicians,

not differentiating the single skills, but we believe that this helped to understand each other's work and to encourage teamwork collaboration.

Author Contributions: Conceptualization, M.B., F.G. and F.A.; methodology, M.B.; software, M.B.; validation, M.B., F.A. and G.P.; formal analysis, M.B., G.P.; investigation, G.P., F.F., R.S., M.R. and C.S.; data curation, M.B., G.P., M.R. and C.S.; writing—original draft preparation, M.B.; writing—review and editing, M.B., F.G., G.P., F.A. and N.D. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The research team, in agreement with the local health Authorities, followed Italian laws regarding ethics committee approval. During the COVID-19 pandemic in Italy, a 'national health emergency' was officially declared. As a result, our hospital was temporarily forced to close outpatient visits and convert them all to telemedicine. For the same reason, at that time it was by law impossible to apply the procedure of requesting evaluation by the ethics committee and therefore telemedicine activities were carried out and scientifically verified without formal approval by the aforementioned committee (Italian legislative reference: Decreto-Legge 9 March 2020, n. 14 "Urgent provisions for the strengthening of the National Health Service in relation to the COVID-19 emergency", published in the Gazzetta Ufficiale n. 62, 9 March 2020). The state of emergency in Italy then ended on 31 March 2022 (Decreto-Legge n. 24/2022). For the period following the reopening of the outpatient clinics, the rule in Italy does not make ethics committee approval mandatory for this type of study. On this last point, we provide the relevant Italian regulatory references below:

- Decree of Health Ministry 26 January 2023: Identification of forty territorial ethics committees;
- Decree of Health Ministry 30 January 2023: Definition of criteria for the composition and functioning of territorial ethics committees.

For this reason, the research group continued its work in the same way as during the emergency phase until the end of the study.

Informed Consent Statement: Informed consent for data treatment using telemedicine was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Lazio, M.d.-A.-I.-R. Programma Nazionale Esiti. 2020. Available online: https://www.agenas.gov.it/images/agenas/In%20primo%20piano/PNE/2020/Agenas_Report_PNE_2020.pdf (accessed on 30 October 2023).
2. Takahashi, E.A.; Schwamm, L.H.; Adeoye, O.M.; Alabi, O.; Jahangir, E.; Misra, S.; Still, C.H.; American Heart Association Council on Cardiovascular Radiology and Intervention, Council on Hypertension, Council on the Kidney in Cardiovascular Disease, and Stroke Council. An Overview of Telehealth in the Management of Cardiovascular Disease: A Scientific Statement From the American Heart Association. *Circulation* **2022**, *146*, e558–e568. [CrossRef] [PubMed]
3. Zhang, A.A.Y.; Chew, N.W.S.; Ng, C.H.; Phua, K.; Aye, Y.N.; Mai, A.; Kong, G.; Saw, K.; Wong, R.C.C.; Kong, W.K.F.; et al. Post-ST-Segment Elevation Myocardial Infarction Follow-Up Care During the COVID-19 Pandemic and the Possible Benefit of Telemedicine: An Observational Study. *Front. Cardiovasc. Med.* **2021**, *8*, 755822. [CrossRef] [PubMed]
4. Spaulding, E.M.; Marvel, F.A.; Lee, M.A.; Yang, W.E.; Demo, R.; Wang, J.; Xun, H.; Shah, L.; Weng, D.; Fashanu, O.E.; et al. Corrie Health Digital Platform for Self-Management in Secondary Prevention After Acute Myocardial Infarction. *Circ. Cardiovasc. Qual. Outcomes* **2019**, *12*, e005509. [CrossRef] [PubMed]
5. Kamel, H.; Hafez, M.S.; Bastawy, I. Telemedicine Improves the Short-Term Medical Care of Acute ST-Segment Elevation Myocardial Infarction After Primary Percutaneous Coronary Intervention. *Front. Cardiovasc. Med.* **2021**, *8*, 693731. [CrossRef] [PubMed]
6. Chan, M.Y.; Koh, K.W.L.; Poh, S.C.; Marchesseau, S.; Singh, D.; Han, Y.; Ng, F.; Lim, E.; Prabath, J.F.; IMMACULATE Investigators; et al. Remote Postdischarge Treatment of Patients with Acute Myocardial Infarction by Allied Health Care Practitioners vs Standard Care: The IMMACULATE Randomized Clinical Trial. *JAMA Cardiol.* **2021**, *6*, 830–835. [CrossRef]
7. Sefidi, N.; Assarroudi, A.; Zandi, Z.; Malkemes, S.J.; Rakhshani, M.H.; Abbaszade, A.; Sahebkar, M. Evaluating the effects of telenursing on patients' activities of daily living and instrumental activities of daily living after myocardial infarction: A randomized controlled trial study. *Geriatr. Gerontol. Int.* **2022**, *22*, 616–622. [CrossRef]

8. Available online: https://www.osservatori.net/it/ricerca/Any?key=telemedicine (accessed on 30 October 2023).
9. Available online: https://validatehta.eu/ (accessed on 30 October 2023).
10. Lowe, J.T.; Patel, S.R.; Hao, W.D.; Johnston, J.; Butt, A.; Strehlow, M.; Lindquist, B.; Lowe, J. Teaching from Afar: Development of a Telemedicine Curriculum for Healthcare Workers in Global Settings. *Cureus* **2021**, *13*, e20123. [CrossRef]
11. Wahezi, S.E.; Duarte, R.A.; Yerra, S.; Thomas, M.A.; Pujar, B.; Sehgal, N.; Argoff, C.; Manchikanti, L.; Gonzalez, D.; Jain, R.; et al. Telemedicine During COVID-19 and Beyond: A Practical Guide and Best Practices Multidisciplinary Approach for the Orthopedic and Neurologic Pain Physical Examination. *Pain Physician* **2020**, *23*, S205–S238, Erratum in: *Pain Physician* **2020**, *23*, 647.
12. Moss, R.J.; Süle, A.; Kohl, S. eHealth and mHealth. *Eur. J. Hosp. Pharm.* **2019**, *26*, 57–58. [CrossRef]
13. Jabareen, H.; Khader, Y.; Taweel, A. Health information systems in Jordan and Palestine: The need for health informatics training. *East. Mediterr. Health J.* **2020**, *26*, 1323–1330. [CrossRef] [PubMed]
14. van Houwelingen, C.T.; Moerman, A.H.; Ettema, R.G.; Kort, H.S.; Ten Cate, O. Competencies required for nursing telehealth activities: A Delphi-study. *Nurse Educ. Today* **2016**, *39*, 50–62. [CrossRef] [PubMed]
15. Elliott, T.; Matsui, E.C.; Cahill, A.; Smith, L.; Leibner, L. Conducting a Professional Telemedicine Visit Using High-Quality Webside Manner. *Curr. Allergy Asthma Rep.* **2022**, *22*, 7–12. [CrossRef] [PubMed]
16. Ministero della Salute. *Linee Guida Nazionali per L'erogazione di Prestazioni in Telemedicina*; Ministero della Salute: Rome, Italy, 2020.
17. Vitacca, M.; Mazzù, M.; Scalvini, S. Socio-technical and organizational challenges to wider e-Health implementation. *Chron. Respir. Dis.* **2009**, *6*, 91–97. [CrossRef] [PubMed]
18. *Decreto del Commissario ad Acta n.U00103 (22 Luglio 2020). Attivazione Servizi di Telemedicina in Ambito Specialistico e Territoriale. Aggiornamento del Catalogo Unico Regionale (CUR)*; Regione Lazio: Lazio, Italy, 2020.
19. Regione Lazio. *Linee di Indirizzo per la Gestione dei Servizi di Telemedicina in Ambito Specialistico e Territoriale*; Regione Lazio: Lazio, Italy, 2020.
20. Bocchino, M.; Santini, L.; Pastena, G.; Ferranti, F.; Paraggio, L.; Danisi, N.; Ammirati, F. e-Health, telemedicina e applicazioni in Cardiologia: Stato dell'arte in Italia ed esperienza dell'U.O.C. di Cardiologia dell'Ospedale G.B. Grassi di Roma. *G. Ital. Cardiol.* **2022**, *23*, 592–603. [CrossRef]
21. Valgimigli, M.; Bueno, H.; Byrne, R.A.; Collet, J.P.; Costa, F.; Jeppsson, A.; Jüni, P.; Kastrati, A.; Kolh, P.; Mauri, L.; et al. 2017 ESC focused update on dual antiplatelet therapy in coronary artery disease developed in collaboration with EACTS: The Task Force for dual antiplatelet therapy in coronary artery disease of the European Society of Cardiology (ESC) and of the European Association for Cardio-Thoracic Surgery (EACTS). *Eur. Heart J.* **2018**, *39*, 213–260. [CrossRef] [PubMed]
22. Levine, G.N.; Bates, E.R.; Bittl, J.A.; Brindis, R.G.; Fihn, S.D.; Fleisher, L.A.; Granger, C.B.; Lange, R.A.; Mack, M.J.; Mauri, L.; et al. 2016 ACC/AHA guideline focused update on duration of dual antiplatelet therapy in patients with coronary artery disease. *Circulation* **2016**, *134*, e123–e155. [CrossRef] [PubMed]
23. Koehler, F.; Winkler, S.; Schieber, M.; Sechtem, U.; Stangl, K.; Böhm, M.; Boll, H.; Kim, S.S.; Koehler, K.; Lücke, S.; et al. Telemedical Interventional Monitoring in Heart Failure (TIM-HF), a randomized, controlled intervention trial investigating the impact of telemedicine on mortality in ambulatory patients with heart failure: Study design. *Eur. J. Heart Fail.* **2010**, *12*, 1354–1362. [CrossRef]
24. Koehler, F.; Koehler, K.; Prescher, S.; Kirwan, B.A.; Wegscheider, K.; Vettorazzi, E.; Lezius, S.; Winkler, S.; Moeller, V.; Fiss, G.; et al. Mortality and morbidity 1 year after stopping a remote patient management intervention: Extended follow-up results from the telemedical interventional management in patients with heart failure II (TIM-HF2) randomised trial. *Lancet Digit. Health* **2020**, *2*, e16–e24. [CrossRef]
25. Frederix, I.; Caiani, E.G.; Dendale, P.; Anker, S.; Bax, J.; Böhm, A.; Cowie, M.; Crawford, J.; De Groot, N.; Dilaveris, P.; et al. ESC e-cardiology working group position paper: Overcoming challenges in digital health implementation in cardiovascular medicine. *Eur. J. Prev. Cardiol.* **2019**, *26*, 1166–1177. [CrossRef]
26. Sinsky, C.A.; Jerzak, J.T.; Hopkins, K.D. Telemedicine and Team-Based Care: The Perils and the Promise. *Mayo Clin. Proc.* **2021**, *96*, 429–437. [CrossRef]
27. Maresca, G.; Anchesi, S.; Bonanno, L.; Bramanti, A.; Carnazza, L.; Cimino, V.; Corallo, F.; Lo Buono, V.; Giambò, F.M.; Latella, D.; et al. Feasibility, Usability, and Customer Satisfaction of the Tele-COVID19 Project, Sicilian Model. *Medicina* **2022**, *58*, 1110. [CrossRef] [PubMed]
28. Tensen, E.; van Buggenum, J.; Witkamp, L.; Jaspers, M.W.; Peute, L.W. The Store-and-Forward Telemedicine Service User-satisfaction Questionnaire: Development and validation of a questionnaire to monitor and assess health care providers' experiences. *J. Telemed. Telecare* **2021**, 1357633X211032409. [CrossRef] [PubMed]
29. De Cola, M.C.; Maresca, G.; D'Aleo, G.; Carnazza, L.; Giliberto, S.; Maggio, M.G.; Bramanti, A.; Calabrò, R.S. Teleassistance for frail elderly people: A usability and customer satisfaction study. *Geriatr. Nurs.* **2020**, *41*, 463–467. [CrossRef] [PubMed]
30. de Moraes, V.Y.; Ferreira, C.B.; Kawagoe, C.K.; Gushken, F.; Azevedo, G.; Ferretti Filho, M. An integrative telehealth platform managed by nurses. *BMC Res. Notes* **2022**, *15*, 301. [CrossRef]