



## Effectiveness of an intervention to reduce stigma towards people with a severe mental disorder diagnosis in primary health care personnel: Programme Igual-Mente

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### ARTICLE INFO

#### Keywords:

Stigma  
Severe mental disorder  
Intervention  
Health care providers

### ABSTRACT

This study assessed the effectiveness of a program (called Igual-Mente, Equal-Mind) designed to reduce stigma in primary health care personnel. A random clinical trial was performed (ISRCTN46464036). There were 316 primary care professionals and technicians who were randomized and assigned to the experimental or control group. The program considered as strategies the education, the contact and the development of skills. There were six sessions with the primary care staff and two sessions with the managers of the health centers. It was executed by two facilitators, a professional psychologist and an expert by experience, i.e., a person diagnosed with a severe mental disorder (SMD). Attitudes, social distance, and humane treatment behaviors toward people with SMD were assessed. The intervention was effective in reducing stigma attitudes and social distance towards people diagnosed with SMD. The magnitude of the changes ranged from moderate to high in all these variables and the effects were maintained for four months after the end of the program. Regarding humane treatment behaviors, the effects were less clear. This study shows good results indicating that well-designed interventions can effectively reduce stigma towards people diagnosed with SMD, which is one of the main challenges of health systems.

### 1. Introduction

Health care personnel display stigma towards people with a diagnosis of mental disorder (MD), particularly people with a diagnosis of severe mental disorder (SMD) (Henderson et al., 2014; Valery and Prouteau, 2020). Stigmatizing attitudes and behaviors are found across professional groups, including nurses (Ebrahimi et al., 2017), psychiatrists (Kochański and Cechnicki, 2017; Loch et al., 2011), social workers and psychologists (Pranckeviciene et al., 2018; Del Olmo-Romero et al., 2019). However, there appear to be some differences between these groups in their degrees of stigmatization. Professionals closer to the area of social sciences, such as psychologists, seem to be less stigmatizing than professionals in the medical area, such as psychiatrists, nurses, and nurse technicians (Del Olmo-Romero et al., 2019; Sapag et al., 2019). Increasing biomedical conceptualizations of mental disorders may

contribute to a greater dehumanization of users, thus decreasing the empathy of professionals, and influencing their attitudes and behaviors towards them (Pavon and Vaes, 2017).

Stigmatization occurs across the different levels of health care, and there are indications that it could be more accentuated in primary health care (PHC) (Vistorte et al., 2018a). Because PHC is the main provider of health care services to the population, the presence of stigma in PHC has relevant effects on people's health (Corrigan et al., 2014). In Chile, although there are very few studies on the subject, recent research confirms that PHC personnel have prejudices towards this population (Vaccari et al., 2020; Vistorte et al., 2018b).

The reduction of stigma towards people with a MD diagnosis is one of the great challenges of public health at global (World Health Organization [WHO], 2016) and local (Ministerio de Salud del Gobierno de Chile [MINSAL], 2017) levels.

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### 1.1. Anti-stigma interventions

The most successful programs to reduce stigma are multicomponent and often combine educational and contact strategies (Knaak et al., 2014; Lanfredi et al., 2019). Educational institutions try to modify stereotypes about MD by providing information. Contact consists of direct or indirect interaction with people who have an MD diagnosis (Stuart et al., 2013). Both strategies are useful in reducing the stigma (Stuart et al., 2014; Thornicroft et al., 2016).

Research shows that professionals and technicians have more negative attitudes towards users when they feel that it is difficult to approach them and that they do not know how to contribute to their treatment (Jones et al., 2015; Valerie & Prouteau, 2019). Therefore, evaluations of anti-stigma programs recommend including skills training as an intervention strategy (Fokuo et al., 2017; Knaak et al., 2014).

In order to maximize the overall success and effectiveness of an intervention, it is important to include active participation of people with an MD diagnosis throughout all aspects of program development, implementation, and delivery (Stuart, 2016). This ensures that the programs respond to the key issues that service users face with respect to stigma, while promoting their empowerment and recovery (Corrigan and Shapiro, 2010). Nonetheless, this approach has only been used recently in low and middle-income countries (Rai et al., 2018).

The way stigma occurs varies by level, from micro to macro, and from one context to another (Holder et al., 2019). There are contextual conditions that influence the attitudes that exist or are maintained towards people with an MD (Cook et al., 2014). Recent research is incorporating contextual factors such as the workplace, work, or team relationship situations, among others, in order to account for stigma (Hanisch et al., 2016; Waugh et al., 2017). Ignoring context and just focusing on individual dimensions is now seen as a weakness in the conceptualization of stigma and, therefore, on interventions for stigma, as it limits the scope and, in particular, the temporal sustainability of the effects of these programs (Henderson et al., 2014; Knaak and Patten, 2016).

### 1.2. Knowledge gaps in research on stigma reduction interventions

Despite the growing effort to develop effective interventions to reduce stigma, important aspects remain to be considered when they are designed and implemented.

Most of the information on interventions to reduce stigma comes from high-income countries. There is scarce information on low and middle-income countries (Thornicroft et al., 2016). Culturally sensitive interventions are required; however, a small percentage of these consider the meanings and practices that exist where they are implemented (Mascayano et al., 2020). Considering these aspects requires a qualitative assessment that identifies how stigma occurs in that social context before designing an intervention (Stutterheim and Ratcliffe, 2021).

Also, there is a small amount of research that takes into consideration the assessment of behavioral changes produced as the result of an intervention (Thornicroft et al., 2016). This is essential because, for an anti-stigma program to be effective, it needs to not only change attitudes but, fundamentally, also behaviors towards people with a MD diagnosis (Jorm, 2020).

Research presents methodological difficulties. There is a small number of designs that use suitable sample sizes, control groups, and randomization (Rao et al., 2019; Thornicroft et al., 2016). In addition, few studies estimate the size of the effect of interventions (Mehta et al., 2015). There is limited evidence on the mid- and long-term effectiveness of interventions. Follow-ups are mostly short-term, so longer follow-ups are required (Gronholm et al., 2017; Henderson and Gronholm, 2018; Mascayano et al., 2020).

Consequently, more methodologically robust research is needed to determine the effects of interventions more accurately (Jorm, 2020;

Mascayano et al., 2020; Mehta et al., 2015).

### 1.3. Aims of the study

This research sought to evaluate a joint intervention strategy in reducing stigmatization towards people with an SMD in primary health care personnel in Chile. The objective of this research was to design, implement, and evaluate an intervention program to reduce negative attitudes and social distance, and to increase inclusive behaviors of health care personnel towards people with SMDs.

## 2. Methods

The design was a multicenter randomized clinical trial. Health care personnel assigned to the experimental group were the first to receive the intervention program; a waiting list was used for the control group, and they received the intervention after completion of the follow-up evaluation. A pre-, post- and four-month follow-up evaluation was carried out in both groups.

### 2.1. Participants

A total of 12 Primary Health Care Centers from the province of Concepción, Chile, participated. A broad invitation to participate was made at each Centre and 341 people who met the inclusion criteria, i.e., primary care professionals or technicians, expressed their willingness to participate. The administrative staff were not included. The final sample consisted of 316 people who completed the pre-intervention evaluation. The participants were randomly assigned to the experimental condition ( $n = 156$ ) or control ( $n = 160$ ). Randomization was performed by individuals. Each health center was considered a block. Within each block, two stratifications were made: by type of profession and by sector. In the first group, three categories were created: medical, health (nurses, midwives, nutritionists, dentists, nurse technicians, and others), and psychosocial (psychologists and social workers); while in the second, categories were created by work sector, i.e., health center territory (in Chile, each primary health care center is responsible for a population sector divided into at least three territories). The program was applied directly to each health center.

### 2.2. Sample size

To estimate the sample size required, a moderate effect of the intervention  $d = 0.5$ , with a power of 95% and a significance level of 5% was considered. The estimated sample was 105 people per group, i.e., 210 people in all. This number was obtained by performing a simulation procedure using a mixed ANOVA, considering the existence of a significant interaction effect between moment X experimental/control group as evidence. A 10% loss was considered, so the minimum number of participants required was 231. At each center, it was established that the maximum number of participants could be 20 people. Therefore, it was estimated that at least 11 health centers were required to obtain the established sample size.

### 2.3. Intervention program

The program developed was named Igual-Mente. It is composed of six two-and-a-half-hour weekly sessions with health care personnel and two sessions with primary health care center management staff. These are group sessions.

The program's approach is based on a participatory research model, where people with a SMD diagnosis were included as part of the research team and participated in the design and implementation of the program.

The program uses three main strategies:

- a) **Education.** Informational content focuses on the modification of social stereotypes by identifying the myths regarding SMD.
- b) **Contact.** This component consists of interaction between the health care personnel participating in the program with people with an SMD diagnosis. The program combines direct contact through experienced co-facilitators (people with a psychiatric diagnosis that have gone through a recovery process) and indirect contact through videos and letters from people with an SMD.
- c) **Skills Development.** Participants are taught how to welcome and solve difficult situations with users. The intervention includes contextualized practice sessions of skills.

In addition, the program takes into account two types of actions related to the health center understood as an organization. The first one is to take into consideration the role of leaders in improving institutional procedures (Knaak et al., 2014). This is the purpose of the two meetings with the authorities of the health centers, which seek to engage and commit them to reduce stigma and improve the treatment of people with a SMD diagnosis. In addition, a professional from each health center was incorporated as a referent, who led the intervention program from within the center.

The second one is to develop a humane treatment protocol for people with SMD to be incorporated into the action protocols that the health center has in order to improve the quality of care for its users. A more detailed review of the levels of intervention and strategies used is found elsewhere (Grandón et al., 2019).

Finally, a large number of aspects from the Canadian Opening Minds Program (Knaak and Patten, 2016) to design and implement successful anti-stigma programs for health care providers were incorporated.

## 2.4. Measurements

### 2.4.1. Primary outcome

**Health Professionals' Attitudes Towards People with a Mental Disorder Diagnosis Scale (EAPS-TM in Spanish) (Vielma-Aguilera et al., 2021).** Based on the Mental Illness Clinicians Attitudes (MICA) (Gabbidon et al., 2013), the EAPS-TM is an 18-item scale that evaluates the attitudes of health professionals towards people with MDs. It is a Likert-type survey with six response options ranging from "strongly agree" to "strongly disagree." The higher the score, the less stigmatizing the health professional's attitude is. The instrument includes two factors: Stigmatizing Beliefs (12 items) and Infantilization and Relational Distance (6 items). The reliability was  $\alpha=0.84$  and  $\alpha=0.73$  for each factor respectively. The internal consistency of the instrument for this study was  $\alpha=0.79$  and  $\omega=0.79$  for the Stigmatizing Beliefs factor, and  $\alpha=0.70$  and  $\omega=0.70$  for the Infantilization factor.

### 2.4.2. Secondary outcomes

**Community Attitudes Towards Mental Illness Scale (CAMI).** It evaluates the attitudes of the general public towards people with an MD. It is a five-options Likert-type survey. The original instrument was adapted for use in the Chilean population (Grandón et al., 2016). The final instrument has two factors: "Acceptance" and "Rejection" of the setting up of mental health centers in the community, each one made up of five items. In the first factor, the higher the score, the more the stigma; while in the second factor, the higher the score, the less the stigma. The internal consistency for this study was  $\alpha=0.73$  and  $\omega=0.74$  for factor 1, and  $\alpha=0.79$  and  $\omega=0.80$  for factor 2.

#### **Social Distance Scale (SD).**

It evaluates the social distance that people show towards individuals with MDs. The scale is adapted for use in Chile (Grandón et al., 2015) and consists of a brief vignette where the case of a person with an MD is presented, followed by a five-item Likert-type survey with five response options. The higher the score, the less the stigma. The instrument has two factors: "Closeness and Social Interaction" (three items) and "Intimacy and Trust" (two items). The internal consistency of each of the

factors for this study reached values of  $\alpha=0.75$  and  $\omega=0.75$  for factor 1, and of  $\alpha=0.76$  and  $\omega=0.76$  for factor 2.

**Humane Treatment Behaviors in Health Care Personnel Scale (ECTH-PS in Spanish) (Vielma-Aguilera et al., 2021).** The scale was developed within the framework of this investigation. Its purpose is to evaluate inclusive and supportive behaviors that the health care personnel show towards people with an SMD diagnosis. It is a self-report of humane treatment behaviors that the health care personnel often show and is based on a previous qualitative study (Vaccari et al., 2020). The scale is made up of 16 items with 4 response options in Likert format. The interpretation of the instruments shows that the higher the score, the less stigma there is. It has two factors: Supportive Behaviors (12 items) and Comfort (4 items), with a reliability of  $\alpha=0.92$  and  $\alpha=0.76$  respectively. The internal consistency for this study was  $\alpha=0.90$  and  $\omega=0.90$  for factor 1, and  $\alpha=0.73$  and  $\omega=0.75$  for factor 2.

## 2.5. Procedure

The study was developed in three stages:

**Stage 1 Intervention Program Design.** Prior to the design of the intervention, a qualitative study was carried out to learn the way in which stigmatization by the primary health care personnel is shown towards users with a SMD diagnosis (Vaccari et al., 2020). With this information, plus the literature review, the Programme Igual-Mente was designed, which was applied as a pilot in a Health Centre that was not included in the final sample. A quantitative and qualitative evaluation of the pilot application was carried out. At the end of each session, a survey was applied that evaluated the methodological and content aspects of the session using a Likert response format and the opinions of the participants through open questions. 86% of the participants rated the contents, teaching material used, activities, discussions and reflections carried out as useful or very useful. However, some activities had to be modified in sessions one, four, five and six to make them more understandable.

The program is manualized and has a set of specially developed material.

**Stage 2 Intervention Execution.** All primary health centers in the communes of Concepción, Talcahuano, Chiguayante, Hualpén, and Tomé were invited to participate. Once the managers accepted that the health care participate in the program, dissemination activities were carried out to motivate the personnel to enroll in training in the humane treatment of people with a psychiatric diagnosis. Those who accepted, signed an informed consent. The program was executed by a team made up of a psychologist facilitator and an expert co-facilitator by experience (person with a psychiatric diagnosis) who were blind to the evaluation and were previously trained for its application. Weekly supervisions were carried out with the executing team to evaluate the development of the process and address any potential difficulties. The groups under intervention consisted of 5–20 people.

**Stage 3 Intervention Evaluation.** A pre-, post-, and four-month follow-up evaluation were carried out in both groups. The pre-test evaluation was made before the intervention (the implementation of the Programme Igual-Mente) began. The post-test and follow-up evaluations were carried out up to 10 days after the end of the intervention and the four-month follow-up, respectively. The evaluation was performed by a previously trained team blind to the random assignment process.

## 2.6. Data analysis

Fully conditional specification-based multiple imputation was used with 10 databases and 20 iterations. The effect of the intervention was estimated by intent to treat. Mixed multilevel model analysis with effects between groups (treatment vs. control) and intragroup (time) was used. Sex, age, profession classified into two categories (health: doctors, nurses, nutritionists, midwives, nurse technicians, dentists, and others; and psychosocial: psychologists and social workers), years in the

profession, presence of a psychiatric diagnosis of their own and of a family member, and the frequency with which people with an MD diagnosis are treated were considered as controls in each dependent variable. The health center and the effect of time on each individual were considered as random effects to be controlled, but only as a source of variance. The experimental vs. control group was considered as a manipulated variable and time was used as an observed variable (T1, T2, and T3). In order to establish the difference between the means, the likelihood-ratio test adapted to missing data was applied. Once established that there were differences in the means, estimated marginal means were used to analyze the groups between which these differences occurred. We used R software (version 3) for statistical analysis.

2.7. Ethical aspects

The study was approved by the Ethics Committee of the University of Concepción and the Ethics Committees of the Health Services of Concepción, code CEC 16–08–44, and Talcahuano, code 67. The protocols were designed taking into account the rights of the participants as stated in the Declaration of Helsinki. All participants voluntarily agreed to participate in the study by signing an informed consent that protected confidentiality for the subsequent use of the information.

3. Results

The CONSORT flow diagram shows the number of participants that completed the evaluation at each stage of the study (see Figure 1);

87.8% ( $n = 137$ ) of the participants in the experimental group completed the post-test (T2), along with 80.6% ( $n = 129$ ) in the control group. At the four-month follow-up, 73.7% ( $n = 115$ ) completed the survey in the experimental group and 70% ( $n = 112$ ) in the control group.

3.1. Sociodemographic characteristics of participants

The majority of participants were women (82.9%), and single (46.2%). The average age was 38.17 ( $SD = 10.59$ ). Regarding the type of profession, 24.1% were nurse technicians followed by social workers (14.1%). The highest percentages of frequency of care for people with SMD diagnosis are “hardly ever” (24.1%) and “almost every day” (22.8%). The vast majority of participants has no psychiatric diagnosis (88%), while 15.2% have a family member with a mental disorder. The average professional experience was 12.03 years ( $SD = 9.50$ ). The average weekly hours of work at the health center were full-time (41.60;  $SD = 6.70$ ) (Table 1).

3.2. Intervention effects

Statistically significant differences were observed in the mean of at least one time point in all outcome variables, except in supportive and comfort behaviors, which are the two factors that make up the scale of humane treatment behavior (Table 2).

Table 3 shows the contrasts between the experimental and control groups at each evaluation time point (see Table 3). It was observed that

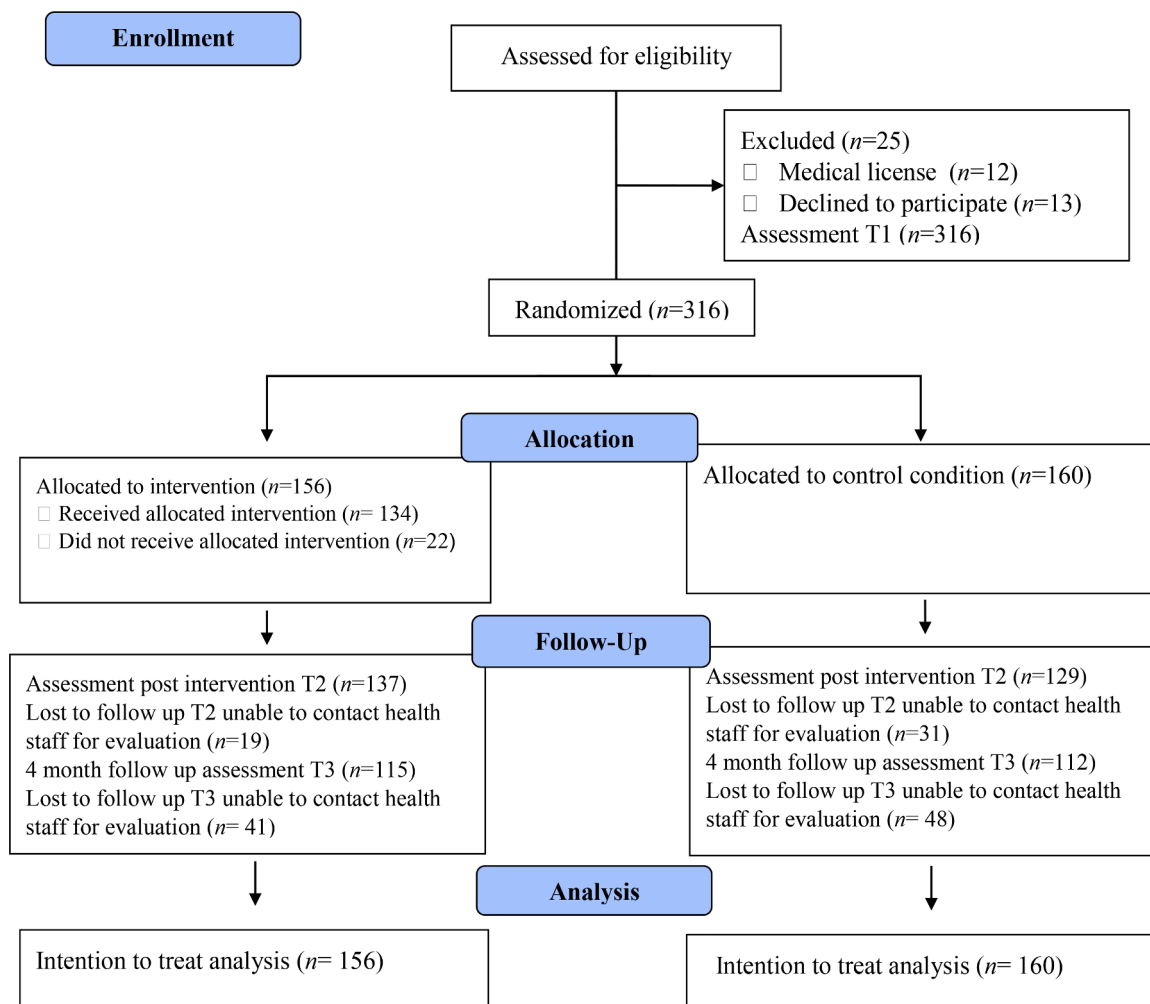


Fig. 1. CONSORT flow diagram

**Table 1**  
Sociodemographic characteristics

	Control Group (n = 160)				Experimental Group (n = 156)				Total (n = 316)				
	n	%	M	S. D.	n	%	M	S. D.	n	%	M	S. D.	
Sex													
Men	29	18.1			25	16.0			54	17.1			
Woman	131	81.9			131	84.0			262	82.9			
Marital status													
Single	74	46.2			72	46.2			146	46.2			
Married/cohabiting	71	44.3			69	44.2			140	44.3			
Separated/ widower	15	9.3			15	9.6			30	9.5			
Profession													
General practitioner	22	13.8			18	11.5			40	12.7			
Nurses	20	12.5			22	14.1			42	13.3			
Nutritionist	14	8.8			14	9.0			28	8.9			
Psychologist	17	10.6			13	8.3			30	9.5			
Social Worker	18	11.3			27	17.3			45	14.2			
Midwife	9	5.6			8	5.1			17	5.4			
Nurses technician	41	25.6			35	22.4			76	24.1			
Dentist	7	4.4			6	3.8			13	4.1			
Other	12	7.5			13	8.3			25	7.9			
Frequency of care of person with mental disorder													
Almost every day	39	24.4			33	21.2			72	22.8			
Once a week	24	15			20	12.8			44	13.9			
Once every 15 days	20	12.5			22	14.1			42	13.3			
Once a month	24	15			21	13.5			45	14.2			
Once every two months	16	10			20	12.8			36	11.4			
Almost never	36	22.5			40	25.6			76	24.1			
Missing	1	0.6							1	0.3			
Diagnosis of own mental disorder													
Yes	22	13.8			16	10.3			38	12.0			
No	138	86.3			140	89.7			278	88.0			
Diagnosis of mental disorder in a family													
Yes	25	15.6			23	14.7			48	15.2			
No	135	84.4			133	85.3			268	84.8			
Contact with the person													
Yes	20	80			20	87			40	83.3			
No	5	20			3	13			8	16.7			
Age			39.18	11.11			37.13	9.97			38.17	10.59	
N° of years as professional			13.1	9.91			10.83	8.94			12.03	9.50	
Working hours			41.46	7.11			41.75	6.26			41.60	6.70	

**Table 2**  
Descriptive pre-, and post intervention, and follow-up and ANOVA of differences of each variable in time

	Control Group						Experimental Group						F
	Pre intervention		Post intervention		Follow-up 4 months		Pre intervention		Post intervention		Follow-up- 4 months		
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
<b>EAPS-TM Factor 1</b>	3.32	0.72	3.49	0.86	3.46	0.82	3.30	0.86	4.22	0.98	4.11	0.93	32.11**
Stigmatising Beliefs													
<b>EAPS-TM Factor 2</b>	4.45	0.82	4.39	0.91	4.17	0.96	4.47	0.87	4.87	0.89	4.68	0.89	11.01**
infantilisation and relational distance													
<b>DS Factor 1</b>	3.51	0.84	3.45	0.85	3.39	0.91	3.5	0.89	3.91	0.87	3.74	0.86	7.433**
Closeness and social interaction													
<b>DS Factor 2</b>	2.01	0.87	2.16	0.94	2.3	0.95	2	1.01	2.60	1.02	2.68	1.10	6.182**
Intimacy and trust													
<b>CAMI Factor 1</b>	1.73	0.57	1.83	0.58	2.13	0.80	1.84	0.63	1.68	0.70	1.90	0.88	3.54*
† Acceptance													
<b>CAMI Factor 2</b>	3.94	0.75	3.87	0.81	3.69	0.79	3.89	0.77	4.13	0.75	4.13	0.71	9.941**
Rejection of the setting up of mental health centres in the community													
<b>ECTH-PS Factor 1</b>	3.34	0.55	3.23	0.48	3.22	0.43	3.39	0.45	3.40	0.50	3.28	0.56	1.466
Supportive Behaviours													
<b>ECTH-PS Factor 2</b>	2.87	0.69	2.86	0.63	2.78	0.64	2.98	0.60	3.16	0.66	3.00	0.71	0.7565
Comfort													

Higher values indicate a more positive outcome, except in CAMI, Dimension: Acceptance (†).

\* p = 0.05.

\*\* p < 0.01.

in the initial evaluation time point (T1) there were no significant differences between the experimental and control groups on any of the variables. At post-test (T2), there were significant differences between

the experimental and control groups on almost all variables, in the expected direction, with the exception of the acceptance factor of the Scale of Community Attitudes towards Mental Illness (CAMI), in which no



**Table 3**  
Contrasts of means between experimental and control groups in the pre-test, post-test, and follow-up

	Differences between the experimental and control group in the pre-test (T1)				Differences between the experimental and control group in the post test (T2)				Differences between the experimental and control group at follow-up (T3)			
	Estimate <sup>a</sup> Δ <sub>E1-C1</sub>	t	df	d	Estimate <sup>b</sup> Δ <sub>E2-C2</sub>	t	df	d	Estimate <sup>c</sup> Δ <sub>E3-C3</sub>	t	df	d
<b>EAPS-TM (factor 1)</b> Stigmatising Beliefs	-0.06	-0.74	450.2	-0.09	0.67***	6.71	539.4	0.92	0.60***	5.87	376.2	0.82
<b>EAPS-TM (factor 2)</b> infantilisation and relational distance	-0.05	-0.54	439.9	-0.06	0.41***	4.04	551.7	0.53	0.44***	3.75	378	0.58
<b>DS (factor 1)</b> Closeness and social interaction	-0.05	-0.52	488.7	-0.06	0.42***	4.19	590.7	0.52	0.39*	2.38	373.9	0.38
<b>DS (factor 2)</b> Intimacy and trust	-0.03	-0.33	507.9	-0.04	0.42***	3.71	644.3	0.47	0.36***	2.79	370.6	0.40
<b>CAMI (factor 1)</b> Acceptance	0.11	1.66	469.9	0.19	-0.13	-1.35	662.5	-0.23	-0.22*	-2.07	356.3	-0.38
<b>CAMI (factor 2)</b> Rejection of the setting up of mental health centres in the community	-0.07	-0.91	466.5	-0.10	0.23***	2.26	550.5	0.32	0.41*	4.09	377.5	0.57
<b>ECTH-PS Factor 1</b>												
Supportive Behaviours												
Health professionals	0.02	0.20	163.8	0.05	0.43***	3.33	208.1	0.85	0.21	1.55	121.3	0.41
Psychosocial professionals	0.42**	2.49	162.3	0.82	0.05	0.33	213.9	0.11	-0.14	-0.81	115	-0.28
<b>ECTH-PS Factor 2</b>												
Comfort												
Health professionals	0.24	1.45	151.8	0.46	0.62***	3.76	182	1.22	0.63***	3.70	119.9	1.24
Psychosocial professionals	0.36	1.70	151.7	0.71	0.16	0.76	188.2	0.32	-0.02	-0.11	114.5	-0.05

\* p = 0.05;

\*\* p = 0.01;

\*\*\* p = 0.001.

<sup>a</sup> Δ E1-C1 Differences between the experimental and control group in the pre-test.

<sup>b</sup> Δ E2-C2 Differences between the experimental and control group in the post-test.

<sup>c</sup> Δ E3-C3 Differences between the experimental and control group at follow-up.

**Table 4**  
Differences of means between the experimental and control groups between T1, T2, and T3

	Differences between the post test and the pre test between the experimental and control groups. (T2- T1)				Differences between the follow-up and the post-test between the experimental and control groups. (T3- T2)				Differences between the follow-up and the pre-test between the experimental and control groups. (T3- T1)			
	Estimate <sup>a</sup> Δ <sub>(E2-C2)-(E1-C1)</sub>	t	df	d	Estimate <sup>b</sup> Δ <sub>(E3-C3)-(E2-C2)</sub>	t	df	d	Estimate <sup>c</sup> Δ <sub>(E3-C3)-(E1-C1)</sub>	t	df	d
<b>EAPS-TM (factor 1)</b> Stigmatising Beliefs	0.74***	7.25	536.3	1.01	-0.07	-0.70	606.1	-0.09	0.67***	6.53	416.4	0.92
<b>EAPS-TM (factor 2)</b> infantilisation and relational distance	0.46***	4.38	546.6	0.60	0.03	0.29	617	0.04	0.49***	4.13	401.6	0.65
<b>DS (factor 1)</b> Closeness and social interaction	0.47***	4.21	542.5	0.58	-0.11	-0.83	600.8	-0.13	0.35*	2.58	450	0.44
<b>DS (factor 2)</b> Intimacy and trust	0.45***	3.49	552.3	0.51	-0.05	-0.38	605.5	-0.06	0.40**	2.78	463.4	0.44
<b>CAMI (factor 1)</b> Acceptance	-0.25*	-2.26	565.7	-0.43	-0.08	-0.64	623.8	-0.14	-0.34**	-2.92	414.9	-0.58
<b>CAMI (factor 2)</b> Rejection of the setting up of mental health centres in the community	0.31**	2.94	534.9	0.43	0.18	1.56	600.6	0.25	0.49***	4.74	430	0.68
<b>ECTH-PS Factor 1</b>												
Supportive Behaviours												
Health professionals	0.40***	2.70	181	0.79	-0.22	-1.46	196	-0.43	0.18	1.18	154.5	0.36
Psychosocial professionals	-0.36	-1.77	181	-0.71	-0.20	-0.99	196	-0.40	-0.56***	-2.67	154.5	-1.11
<b>ECTH-PS Factor 2</b>												
Comfort												
Health professionals	0.38*	2.20	176.7	0.75	0.00	0.05	194.4	0.01	0.39*	2.2	147.3	0.77
Psychosocial professionals	-0.19	-0.83	176.7	-0.38	-0.19	-0.80	194.4	-0.37	-0.39	-1.60	147.3	-0.76

\* p = 0.05.

\*\* p = 0.01.

\*\*\* p = 0.001.

<sup>a</sup> Δ (E2-C2) – (E1-C1) Differences between the post test and the pre test between the experimental and control groups.

<sup>b</sup> Δ (E3- C3) – (E2-C2) Differences between the follow-up and the post-test between the experimental and control groups.

<sup>c</sup> Δ (E3-C3) – (E1-C1) Difference between the follow-up and the pre-test between the experimental and control groups.

difference was observed between the experimental and control groups. Finally, at follow-up (T3), statistically significant differences in the mean of all variables between the experimental and control groups were observed again, this time including the CAMI acceptance factor.

Table 4 shows a more detailed analysis contrasting the mean differences between the experimental and control groups across the three time points. It was observed that in both the main result variable and the remaining variables, there were significant differences between the post-test and the pre-test (T2-T1) between the experimental and control groups. In the participants' attitudes towards people with a MD diagnosis, it was observed that stigmatizing beliefs decreased  $\Delta^{(E2-C2) - (E1-C1)} = 0.743^{***}$  as well as infantilization and relational distance  $\Delta^{(E2-C2) - (E1-C1)} = 0.463^{***}$  after the intervention. The size of the effect was high ( $d = 1.01$ ) for the first factor and moderate for the second factor ( $d = 0.60$ ). Social distance also decreased, increasing closeness and social interaction  $\Delta^{(E2-C2) - (E1-C1)} = 0.471^{***}$  as well as intimacy and trust  $\Delta^{(E2-C2) - (E1-C1)} = 0.459^{***}$ . Both sizes of the effect were moderate ( $d = 0.58$  and  $d = 0.51$ ). On the other hand, the acceptance of people with MDs increased  $\Delta^{(E2-C2) - (E1-C1)} = -0.256^*$  and the rejection of the setting up of mental health centers in the community decreased  $\Delta^{(E2-C2) - (E1-C1)} = 0.3112^{**}$ . The effect size for both factors was medium ( $d = -0.43$  and  $d = 0.43$ ).

When comparing the differences in means of the different variables between the experimental and control groups in the post-test with respect to the follow-up (T2-T3), no statistically significant changes are observed, indicating that the effects observed in the post-test were maintained for four months after the intervention. The comparison of the means obtained in the initial evaluation with those obtained at follow-up (T1-T3) confirms the maintenance of the results. As observed in Table 4, the differences are significant in all variables, reaching effect sizes ranging from moderate to high (see Table 4).

At a general level, no significant differences were found in the means of the scale of humane treatment behaviors in health care personnel (ECTH-PS) (Table 2). For a more detailed analysis, post hoc contrasts of this variable were carried out considering the professional profile of the participants. For this purpose, the sample was divided into two: health professionals (doctors, nurses, nutritionists, midwives, nurse technicians, dentists, and others) and psychosocial professionals (psychologists and social workers). Some effects statistically significant were observed (Table 2 and 3). The intervention increased supportive and comfort behaviors towards users with an SMD diagnosis from health professionals with more biomedical training. The same did not hold true for professionals in the psychosocial area as the intervention did not increase humane treatment behaviors. On the contrary, there was an inverse effect in supportive behaviors at follow-up.

#### 4. Discussion

This research developed and evaluated an intervention to reduce stigmatization towards people with a severe mental disorder diagnosis in primary health care personnel. The results showed that the intervention, i.e., the Programme Igual-Mente, was effective in reducing stigma towards people diagnosed with SMD. In particular, stigmatizing beliefs, infantilization, relational distance, and rejection of the setting-up of mental health centers in the community decreased, while closeness and social interaction, intimacy and trust, and acceptance of these people increased. The magnitude of the changes ranged from moderate to high in all these variables and the effects were maintained for up to four months after the end of the Programme. These results are considerably better than those reported in other studies, both due to the magnitude of the change that typically ranges from low to moderate in other studies (Li et al., 2019; Mascayano et al., 2020; Rao et al., 2019), as well as in the maintenance of its effects, which held to four-month follow-up (Mehta et al., 2015; Morgan et al., 2018).

Regarding humane treatment behaviors, no effects were observed. Post hoc analysis showed the effects of the program were greater for

professionals with biomedical training than for those with psychosocial training. These results suggest that professional training, as found in other research, influences stigma (Del Olmo-Romero et al., 2019; Sapag et al., 2019) and, in this case, behaviors towards service users in particular. It would be useful to explore which aspects of the interaction of these different types of professionals have the greatest impact on the level of stigma.

One aspect that likely helps to account for the positive results was that the Programme Igual-Mente was developed following an explicit theoretical model, eco-systemic in this case, which combined different conceptual approaches and considered different levels of intervention (Grandón et al., 2019). In addition, an approach based on community participation was used, where people with an SMD diagnosis participated in all stages of the investigative process, which has been shown to generate better results (Ashton et al., 2018).

The cultural relevance of the program also was actively considered. For this, a qualitative research was conducted on the way stigma occurs in primary health care personnel (WHO, 2016). Stigma has contextual peculiarities derived from culture that are important to consider when developing an intervention (Waugh et al., 2017).

The program considered the two components of the interventions that have demonstrated greater effectiveness as well: contact and education (Harris et al., 2019; Stuart et al., 2014; Thornicroft et al., 2016). In addition, it incorporated the development of skills to handle difficult situations with people with an SMD in a contextualized way, i.e., based on their own experiences.

Finally, the Programme Igual-Mente incorporated most of the aspects recommended for the design and implementation of successful anti-stigma programs for health care providers from the Canadian Opening Minds Program (Knaak and Patten, 2016; Knaak et al., 2014). Specifically, all the recommended key components were used to build the program: facilitators supportive of the topic, different forms of contact (direct and indirect), personal testimonies that showed that recovery is possible, demystification of erroneous beliefs and, concretely, teaching how to cope with difficult situations with service users. Regarding the strategies used to deliver the program, the following were used: key messages that were constantly repeated throughout the sessions, one of which was "people with a serious mental disorder are people first of all"; the examples used were obtained from the health personnel's own experiences; dynamic activities with an emphasis on reflection; and finally, the speakers were trained to tell their stories based on equal status (Ashton et al., 2018; Stuart et al., 2014).

From a methodological point of view, we tried to minimize some of the limitations that have usually been identified in research on this topic, especially in those carried out in low and middle-income countries (Rao et al., 2019; Thornicroft et al., 2016). The effectiveness of the program was evaluated through a randomized clinical trial that comprised of both a post and a follow-up measurement. However, the follow-up was short, which is one of the limitations of this study. The implemented program is protocolized carefully and in detail. Standardized measures with adequate psychometric properties were used and the evaluation of changes both at attitudinal and behavioral levels was included.

A more thorough evaluation of the effects of a program of this nature should ideally consider the users' perception as it emerges as the most promising way to overcome the limitations of the sole use of self-report measures, which is the main limitation of this study. Other challenges that arise from the research carried out, along with studies that allow these results to be replicated by other research teams and to analyze the durability of the changes in a longer term, have to do with their transferability and possible escalation.

An additional challenge of a broader scope is the adaptation of this intervention for use in other health contexts, beyond primary care. Reducing the stigma that is present even in specialized mental health teams themselves emerges as particularly important and challenging (Henderson et al., 2014). In this regard, it points to the consideration that research in the field of stigma may require re-evaluating its

compatibility with the dominant biomedical conception of mental disorders (Lebowitz and Appelbaum, 2019).

In conclusion, this study shows that well-designed interventions that consider key elements to favor attitudinal and behavioral change can effectively reduce stigmatization towards people with an SMD diagnosis, which constitutes one of the main challenges for health systems to respond to the needs of this population.

#### CRedit authorship contribution statement

**Pamela Grandón:** Conceptualization, Writing – original draft. **Sandra Saldívia:** Conceptualization. **Felix Cova:** Conceptualization. **Claudio Bustos:** Formal analysis. **Pamela Vaccari:** Visualization. **Raúl Ramírez-Vielma:** Visualization. **Alexis Vielma-Aguilera:** Visualization. **Carlos Zambrano:** Visualization. **Camila Ortiz:** Supervision. **Stephanie Knaak:** Writing – review & editing.

#### Declaration of Competing Interest

None.

#### Funding

This work was supported by the Fondo Nacional de Desarrollo Científico y Tecnológico de Chile, project FONDECYT N°1171287.

#### Acknowledgments

We thank the Municipal Health Directorates of Talcahuano, Hualpén, Chiguayante, Concepción and Tomé for supporting this research, providing the facilities for their staff to participate and lending the physical spaces necessary to carry out the intervention.

#### Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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