Positive education through social media to reduce negative stereotypes towards old age: a quasi-experimental study

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1. Study Protocol and Statistical Analysis Plan. Results

The study was approved by the ethics committee of the Hospital Clínico San Carlos in Madrid (reference number C.I. 23/054-E_TFM) and was conducted during the months of February and March of 2023.

This was a quasi-experimental prospective study that used snowball sampling to recruit participants. The study was publicized through Instagram accounts of two authors with a combined following of over 100,000. Of the initial 250 participants, 109 completed the study. Inclusion criteria included:

1. Being over 18 years old.

2. Participating in both the PRE and POST questionnaires of the *Negative Stereotypes towards Old Age Questionnaire* (CENVE).

3. Following the Instagram posts related to the intervention for 3 days or more.

Instruments

The evaluation instruments for this study included two online Google Forms questionnaires (See in Supplementary Material) designed for pre- and post-assessment. The pre-assessment questionnaire consisted of two sections: 16 items on sociodemographic data and 15 items from the Negative Stereotypes towards Old Age Questionnaire (CENVE) (Blanca et al., 2005). This instrument assesses individuals' stereotypes towards the older population using a Likert-type response scale ranging from 1 to 4 (1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Somewhat Agree, 4 = Strongly Agree). It provides a total score and three dimensions: Health Dimension, Social Motivation Dimension, and Character/Personality Dimension. The maximum score on this questionnaire is 60 points (indicating a high presence of negative stereotypes

towards old age), and the minimum score is 15 points (indicating a low presence of such stereotypes).

Procedure

Both at the initial and final questionnaire stages, that is, before and after the 7-day intervention period of reading the posts, was administered the questionnaire CENVE. Additionally, the post-intervention evaluation included a new question that gathered data on the frequency with which the participant had followed the intervention (0-2, 3-4, and 5-7 days).

Intervention

The intervention consisted of daily positive messages about aging posted on an Instagram account (@laetapaplateada), created specifically for this study, and was conducted over the course of a week. Examples included "The ability to make decisions improves with age" and "Emotional regulation improves with age" (David, 2017). These posts were accompanied by their respective author references .

Statistical Analysis

A paired samples t-test was conducted to compare each subject's total score on the CENVE scale before and after the intervention. To determine if certain sociodemographic variables were associated with the presence of negative stereotypes towards old age, the scores obtained in the PRE questionnaire for each study group were analyzed using descriptive statistics and hypothesis testing. This analysis was performed using Student's t-test (for variables with 2 categories) or ANOVA (for variables with more than 2 categories). The analysis of the "sex" variable was omitted due to low male participation.

Furthermore, to examine if various demographic variables were associated with pre-post differences in the presentation of negative stereotypes towards older people, a Repeated Measures ANOVA was performed for each of the sociodemographic variables collected in the questionnaires: sex, age, marital status, place of residence, cohabitants, religion, education level, occupation, frequency of contact with older people, area of contact with older people, cohabitation with older people, relationship with grandparents, significance level of that relationship, knowledge of any of their grandparents' loss of abilities (physical/mental), frequency of viewing intervention posts on Instagram, etc.

All tests were analyzed using the statistical software Jamovi 2.3.21. Data for the assessment of negative stereotypes towards old age were collected in February and March 2023.

Results

A total of 109 individuals responded to both questionnaires and participated in the intervention for three days or more. Among them, 97.2% were women, and 2.8% were men, residing in Spain (95.4%) .The participants' ages ranged from 22 to 69 years, with an average age of 44.63 years (standard deviation of 11.23). Given that the frequency of contact with older adults can influence stereotypes towards this population, we investigated this contact, finding that nearly half of the subjects (49.5%) had daily interactions with older adults, primarily within the family setting (72.5%). Additionally, 37.6% of the participants lived with someone in this age group. Regarding their grandparents, 99.1% of the participants reported knowing at least one grandparent, with 51.9% describing a significant relationship where the grandparent actively participated in their upbringing. Furthermore, 74.3% of the subjects were aware that at least one grandparent had experienced a decline in physical and/or mental capacity, with more than half of these cases (53.1%) involving both physical and mental declines.

However, none of the sociodemographic variables collected in the questionnaires appeared to be associated with the pre-intervention questionnaire scores or with the differences in scores before and after the intervention.

The primary objective of this study was to analyze whether positive education about aging disseminated through social media could reduce negative stereotypes towards older adults. To this end, we collected data on the participants' engagement with the intervention. It was found that 59.6% of them followed the intervention for 3-4 days, while 40.4% did so for 5-7 days. The results demonstrated that after the 7-day intervention, during which positive messages about aging were posted on the social media platform Instagram, participants had lower scores on the Negative Stereotypes towards Old Age Questionnaire (CENVE) than before the intervention. Hence, individuals who completed the study exhibited fewer negative stereotypes towards aging post-intervention.

2. Informed consent

All participants, prior to engaging in the study and just before filling out the form, had to check a box indicating their acceptance of the informed consent. Without checking it, they could not access the initial survey. Additionally, the study underwent an ethics committee review,