1 **VACCINATION AGAINST COVID-19 AND ITS COMMUNITY MANAGEMENT: A**

2 **QUALITATIVE STUDY**

3 **Background**: Nurses play key roles as vaccination agents and frontline workers who deal with

4 prejudice and misinformation. This study aims to know the attitudes and perceptions of nursing

5 students toward COVID-19 vaccination and its social and institutional management.

6 **Method**: This qualitative study consisted of an exploratory phase involving first- and fourth-

7 year nursing students and a second phase using the photovoice tool, SHOWED mnemonic

8 method followed by discussion groups on second-year students.

9 **Results**: Three themes emerged: (1) Hope tinged with fear, (2) too much information generating

10 fear, uncertainty, and mistrust; and (3) Leaders without recognition or voice.

11 **Conclusions**: The results inform the body of knowledge in nursing science and enhances a

12 change in clinical practice, since they provide new insights regarding the perceptions of young

13 people with vaccination and its management, and highlight the need to train future nurses in

14 health literacy and in new ways of communication with community.

15 **Keywords**: COVID-19; COVID-19 Vaccines; Nurses; Nursing student; Qualitative research;

16 Pandemics

17 **INTRODUCTION**

18 Vaccinations offer the highest health benefits for people worldwide. They have been one of the

19 greatest successes in the history of public health for combating communicable diseases, not

20 only because they offer protection at the individual level, but also because they allow the control

21 and led to the near-eradication of many highly dangerous diseases (Organization, 2020).

22 *Background*

23 Toward the end of 2019, first cases of a new pneumonia of unknown aetiology started to appear,

24 causing severe respiratory distress syndrome. Soon after, a new coronavirus, SARS-CoV-2

25 (named COVID-19), was identified as the underlying cause. According to WHO data, in

26 January 2022 there were 373,229,380 registered cases worldwide and 5,658,702 deaths had

27 been attributed to the disease (WHO, 2021).

28 Prior to the COVID-19 pandemic, the advent of vaccines gained great attention in the media,

29 producing headlines with sometimes controversial undertones that barely concealed the

30 underlying agendas. Some media outlets used specific situations to appeal to their audience's

31 emotions and often presented controversial viewpoints. Healthcare professionals usually

32 employ science-based arguments to provide truthful information and disprove myths and false

33 beliefs (Tuells, 2016).

34 Anti-vaccination activism is nothing new and is as old as the vaccines themselves. In 2019, the

35 ((WHO), 2019) classified this movement as one of the greatest threats to global public health.

36 The reasons that attract parts of the population to these kinds of movements are manifold and

37 include philosophical reasons and religious beliefs, lack of or unproven effectiveness of the

38 vaccine, as well as (imagined) risks or consequences (Carrasco & Lozano, 2018). Especially in

39 the context of newly emerging diseases, the public is often sceptical toward new vaccines as

40 there are insufficient data to make informed decisions (Opel et al., 2020). The literature reports

41 that regardless of the variety of attitudes towards vaccination against COVID-19, hesitancy is

42 a universal problem (Küçükali et al., 2022; Lin et al., 2020). Fear of the secondary effects of

43 the vaccine, scepticism about its safety, the short duration of immunity, doubts about its

44 necessity and efficacy, lack of information and general rejection of the vaccine are some of the

45 factors that influence the acceptance or hesitation (Küçükali et al., 2022).

46 Nowadays, the information published on social networks have become valuable sources to

47 identify the beliefs and attitudes of the general public towards important health issues, as well

48 as to understand sociocultural contexts (Küçükali et al., 2022; Sinnenberg et al., 2017). The

49 Centre for Countering Digital Hate (CCDH) has produced a report warning of the growing anti-

50 vaccine movement and that it could undermine the use of any future COVID-19 vaccine. The

51 data shows 31 million similar people follow anti-vaccine groups on Facebook, with 17 million

52 people signing up for accounts on YouTube (Burki, 2020; Diseases, 2020). On the other hand,

53 the fact that future health personnel are vaccinated can contribute to better management of the

54 pandemic but can also serve as a role model for the general population to follow the same

55 attitude (Patelarou et al., 2021).

56 A report comparing levels of vaccine acceptance across Europe found that in Spain the level of

57 trust in vaccines was among the highest. However, the same report concluded that the age group

58 of young adults between 25 and 34 years old had the lowest level of trust in vaccines, followed

59 by those between 18 and 24 years old (Larson et al., 2018). On the other hand, health personnel

60 constitute a risk group for which vaccination is indicated. Before the outbreak of the pandemic,

61 immunization rates in this group were still significantly below WHO recommendations. The

62 most reliable data on vaccination levels among Spanish healthcare personnel is for influenza

63 vaccinations, where figures reached 39.4% during the 2018-2019 campaign (Sanidad, 2019).

64 In contrast, according to the European Centre for Disease Prevention and Control ((ECDC),

65 2022), the vaccination rate against COVID-19 among Spanish health workers reached 92.3%

66 in February 2022.

67 Several studies have shown that community interventions to inform and educate can improve

68 attitudes towards vaccination (Saeterdal et al., 2014). Specific recommendations include:

69 creating clearer communication strategies, establishing a therapeutic alliance, and improving

70 health literacy (Fernández-Basanta et al., 2021). Nurses, as frontline workers, are pivotal for

71 both providing vaccination advice and administrating the vaccine itself; they can perform

72 certain community interventions as part of their healthcare and health promotion activities

73 (Deem, 2018).

74 Health education is a fundamental part of nursing work and involves educating and raising

75 awareness in the population. The recent increase in anti-vaccine sentiment, often fuelled by

76 misinformation, stresses the important role played by frontline workers in countering this trend

77 with truthful information. In the field, professionals depend on health information and their

78 persuasive skills as their most powerful tools to address doubts and concerns in individual

79 consultations or as part of vaccination campaigns that aim to educate the general population

80 (Dubé et al., 2020; Fernández-Basanta et al., 2021).

81 *Aim*

82 Given the importance of frontline workers, this study aims to determine the attitudes and

83 perceptions of nursing students regarding COVID-19 vaccination in general and its social and

84 institutional management in particular.

85 The perceptions of this group can shed light on the desirable acceptance of vaccination in their

86 population group, within a scenario that is constantly changing. The study is set in a time when

87 the urgent need for mass immunization to control a pandemic is faced with rising anti-

88 vaccination sentiment. By involving students from various career stages, the collected data can

89 be used to assess the impact of the different theoretical-practical training modules on student

90 attitudes and perceptions, allowing us to gauge whether these courses have the desired effect in

91 the professional formation of students.

92 **DESIGN**

93 This qualitative study consisted of an exploratory phase involving semi-structured interviews

94 of students enrolled in their first and fourth (last) year of nursing training (Polit & Beck, 2009).

95 In a second phase, we employed the photovoice method, SHOWED mnemonic method,

96 followed by a discussion group, as a qualitative participatory action methodology in 2nd year

97 students (Wallerstein & Bernstein, 1988; Wang & Burris, 1997).

98 *Participants and data collection*

99 We used three methods for data collection: semi-structured interviews, participation in a

100 photovoice, and a discussion group.

101 During the exploratory phase, we interviewed four first-year students and nine fourth-year

102 students enrolled in nursing undergraduate degrees at X university. All 13 participants were

103 Spanish, 11 were women and 2 men. The sole inclusion criterion consisted of being a first- or

104 fourth-year nursing degree student. Students were contacted by email, using department mailing

105 lists, and invited to participate in the study. During a first video call (in-person meetings could

106 not be conducted due to pandemic-related restrictions), each volunteer was informed of the

107 objectives of the study. The actual interview was conducted by SLV in a second video call that

108 took place between March and April 2021 and lasted about 15 minutes. The interviews were

109 designed and conducted based on a previous literature review and existing experience. All

110 interviews began with three introductory questions to determine the student's general attitude

111 towards vaccinating against COVID-19, as well as their opinions on the management of the

112 pandemic and its portrayal in the traditional media and social networks and on how the issue of

113 vaccinating an entire population should be approached to achieve maximum success. Further

114 questions encouraged additional narration allowing participants to elaborate on their opinions.

115 The interviews were conducted in Spanish or Galician and were tape-recorded and transcribed

116   by the interviewer. To guarantee anonymity, student names were encoded using the letter "E"

117   followed by a sequentially assigned number, a symbol indicating the participant's gender (♀ or

118   ♂), and the number 1 or 4 depending on their year of study.

119   A total of 57 second-year students participated in the photovoice study. All students enrolled in

120   "Community Nursing I" were invited to participate in the activity *Photovoice: A look at*

121   *vaccination against COVID-19*. Out of 62 enrolled students, 57 volunteered to participate, 51

122   were women, six were men, and all had the Spanish nationality. This activity began with a

123   group session where CC and SFB presented and explained the activity, the methodology, and

124   the objectives. Informed consent was obtained from all participants. The students had one week

125   to take photographs in relation to these three general questions:

126   • What is your opinion regarding vaccination against COVID-19?

127   • How do you see your role as a future nurse regarding COVID-19 vaccinations?

128   • How do you perceive the management of vaccination against COVID-19 in your

129   community?

130   Participants were given instructions that their photographs should identify neither people nor

131   places, respect the anonymity of the participant, and not be offensive or degrading to any

132   person.

133   Along with the photograph, students had to submit the SHOWED mnemonic method

134   (Wallerstein & Bernstein, 1988; Wang & Burris, 1997), requiring them to add a title to the

135   photograph and answer five questions: What do you see here? What is really happening? How

136   does this relate to our lives? Why does this problem or strength exist? What can we do about

137   it? (Catalani & Minkler, 2010; Wallerstein & Bernstein, 1988). As above, student names were

138   encoded, although this time using the letters DG, followed by a sequential number, the gender

139   symbol, and the number "2" to indicate their year of study.

140   A preliminary analysis of the individual photovoice reports was carried out by SFB and CC.

141   Thirty-two reports were selected based on the originality of the photograph, the profoundness

142   of the insight offered by the image, and the diversity of emerging themes. Then, a group meeting

143   was held to discuss the preliminary analysis of the 32 selected reports. Three facilitators (CC,

144   MJMF, and SFB) guided the discussion with the objective to encourage interaction and debate

145   among students. All 57 second-year students participated in the discussion group. The

146   discussion group was recorded as digital audio and transcribed by SFB. Three posters

147   promoting vaccination to young people were created using the students' photographs and

148   disseminated through the university's social media channels (Supplementary File 1).

149   *Data analysis and rigour*

150   The collected data were analysed using thematic content analysis (Braun & Clarke, 2012). The

151   first step involved an initial reading carried out by SFB and SLV. After this, we searched for

152   meaningful units to codify and group them into main categories. The emerging categories were

153   discussed among all authors to avoid bias in the interpretation of the data. The preliminary

154   results were sent to the participants to ensure that our interpretations matched their intended

155   meaning. Data sufficiency was achieved by using informant and methods triangulation.

156   **Ethical consideration**

157   The study was approved by the Research and Teaching Ethics Committee of University of *X*

158   (file number 2021-0008). Nursing students were provided with verbal and written information

159   about the study and written informed consent was obtained from each participant, pointing out

160   that their participation was confidential and voluntary. All data were anonymized, and the video

161   and audio recordings destroyed after transcription. Before their destruction they were stored on

162   a hard drive, and this in turn was kept in an office where only its members have access.

RESULTS

Thirteen nursing students participated in the exploratory phase through interviews, 4 first-year and 9 fourth-year undergraduate students. A total of 57 second-year students participated in the photovoice part of the project and in a discussion group to discuss the 31 submitted student reports.

Three main themes could be identified to represent the perception of nursing students of vaccination against COVID-19 and its community management: (i) Hope tinged with fear; (ii) Too much information generating fear, uncertainty, and mistrust; and (iii) Leaders without recognition or voice (Figure 1).

Figure 1. Emerging themes describing nursing student perceptions of vaccinations against COVID-19 and its community management.

Hope tinged with fear

Many student photographs and reflections revolved around the hope to recover their pre-pandemic lives and social relationships through vaccination. While all students were aware of the public health impact of the pandemic, the vast majority highlighted the impact on the psychological and social dimensions. For them, vaccination meant being able to recover these two dimensions as the impact of the virus goes far beyond the public health dimension (see Figure 2a and quotation from DG63♀_2 student on table 1).

Figure 2. Representative student photos from the themes 3.1, 3.2, 3.3. (a) DG24♀ theme 3.1, (b) DG63♀ theme 3.1; (c) DG49♂ theme i 3.1; (d) DG60♀ theme 3.2; (e) DG18♀ theme 3.2; (f) DG1♀ theme 3.3.

Their photographs, reflections, and narratives showed the importance of social relationships for their well-being. The pandemic required physical distancing, which they understood as a necessary measure to protect their loved ones. Vaccination represented a means to overcome this restriction and regain the ability to express affection through physical contact (Figure 2b).

187   Being embedded in a clinical setting, they became aware of the adverse effects of loneliness,

188   as the DG19♀_2 student expressed (see table 1). In addition, by experiencing the impact of the

189   disease on people and their families first-hand, they uttered the wish to be vaccinated and did

190   not question the need to create group immunity to contain this pandemic.

191   Another prominent viewpoint was that the vaccine can protect loved ones and the community

192   as a whole, as reflected by the DG50♀_2 and E8♂_4 participants (table 1) and Figure 2c:

193   While fears associated with the vaccines' side effects were also palpable among the nursing

194   students, they stated that the benefits outweighed the risks. For some, vaccine-related fears and

195   doubts about getting vaccinated were also age related, in that older people would be more afraid

196   of getting sick and therefore less reluctant to become vaccinated, while younger people would

197   be more fearful of side effects when weighing the arguments about vaccination (see quotation

198   from E1♀_1 student on table 1):

199   *Too much information generating fear, uncertainty, and mistrust*

200   The SARS-CoV-2 pandemic has become a central element in people's lives and society as a

201   whole. This theme refers to the institutional and media management of COVID-19, and the

202   repercussions on the population's decisions to get vaccinated.

203   Participants perceived the Spanish institutional management of the vaccination programme as

204   having lacked a clear response which generated uncertainty. Some also criticised the constant

205   changes in the vaccination plan and discrepancies in the age-related indications of the different

206   types of vaccine against COVID-19. They also stated that they, and the general population, had

207   been exposed to an excess of information by the media. In many cases, this information was

208   contradictory (Figure 2d).

209   Some participants highlighted the overall mismanagement of the vaccination campaign which

210   lacked a global strategy and effective community approach which in turn resulted in inequalities

211 regarding access to and administration of the vaccine due to economic reasons (see quotation
212 from DG28♀_2 student on table 1).

213 Most participants held the view that the media contributed to the development of conspiracies
214 and distrust regarding COVID-19 vaccination by disseminating confusing and untrue
215 information. News often focused on the seriousness of side effects and perpetuated opinions of
216 people that were not based on evidence. This resulted in fear and distrust of the vaccination
217 which was not helped by the at times wavering and unclear institutional management (see
218 quotation from DG40♀_2 student on table 1).

219 Students stated that many people did not question the information coming from the media, that
220 the majority prioritized their personal well-being over that of the community, and that they
221 underestimated the risk of personally becoming affected by the disease. Likewise, E8♂_4
222 fourth-year student reported that they questioned their own vaccination (see table 1).

223 Participants also mentioned that large parts of the population appeared to give more credence
224 to opinionated discourses in the media, even if they contradicted evidence-based information
225 they received from their health professional. Students attributed this disconnect to the fact that
226 health professionals are not considered social references. In addition, students stated that the
227 media prioritized the dissemination of these unqualified messages due to the emotional
228 response they generated in the population. Finally, students stated that people were more
229 comfortable accepting fake messages over reality, even if this implied blaming health
230 professionals, as illustrated in Figure 2e and the DG38♀_2 student's quotation on table 1.

231 Participants stated that people often questioned the safety of vaccines because of the media
232 focus on their side effects, while being unaware of the side effects of available treatment options
233 (Figure 2e). However, some students felt that vaccination had received good media coverage
234 as information about serious side effects is part of balanced reporting.

235 Age was seen as factor that influenced where people obtained their news from, with older

236 people mainly following the news and opinion programs on public television, the radio, and the

237 printed press. Students considered these mainstream media as overly alarmist which contributed

238 to the fear and mistrust of the vaccine. They even suggested to impose government control over

239 the media to reduce the sensationalist and misleading reporting (see quotation from DG22♀_2

240 student on table 1).

241 On the other hand, young people accessed other types of information that allowed them to have

242 other viewpoints. However, for some, the social media were just as bad and contributed to being

243 ill-informed. The first- and fourth-year nursing students reported two different types of

244 information sources available on social networks: (i) social media profiles of health

245 professionals, which were characterized by truthful information and based on scientific

246 evidence, and which they considered more informative and useful to resolve personal doubts;

247 and (ii) "influencers" who often did not promote vaccination and did not set a good example

248 regarding COVID-19 prevention measures (see quotation from E5♀_4 student on table 1).

249 *Leaders without recognition or voice*

250 Healthcare professionals, and especially nurses, were seen by our participants as key to

251 vaccination and to restoring normality. They would preferably ask nurses for advice and support

252 regarding vaccination (see quotation from DG14♀_2 student on table 1).

253 Participants believed that as a result of the pandemic, people became aware of the importance

254 of health professionals and scientists as they were the only ones who could provide a solution

255 to this global crisis; or at least the significant efforts made by these professional groups to

256 overcome the crisis increased their visibility in society. Nevertheless, they believed that this

257 visibility has already started to fade and that the social status of researchers and health

258 professionals was largely the same as before the pandemic.

259   Nursing students highlighted the gap between health professionals/nurses and the community

260   (Figure 2f), as expressed by the DG21♀_2 second-year student (see table 1). As a solution,

261   students proposed to expand the outreach efforts of health professionals requiring an increased

262   presence in social media (see quotation from DG54♀_2 student on table 1).

DISCUSSION

264   Our study examined the perceptions of Spanish nursing students regarding vaccination against

265   COVID-19, its management at the institutional level, and its portrayal in traditional and social

266   media. To most students, the vaccine represented the hope of being able to recover their

267   previous lives, express affection, and rekindle social relationships. It also represented protection

268   of loved ones. Being embedded in a real clinical setting affected the students' perceptions of

269   vaccination. However, media and institutional management was seen as causing fear. The

270   absence of clear answers and the ubiquity of conflicting information regarding the vaccination

271   plan, combined with an individualistic rather than community-based approach, contributed to

272   uncertainty. This was exacerbated by the dissemination of confusing, untrue, and alarmist

273   information and the dominance of opinion-based discourses instead of evidence-based

274   information which resulted in distrust toward vaccines. At the same time, nursing students

275   perceived a gap between health professionals and the community, who did not consult them

276   despite their relevant expertise on vaccination.

277   Nurses are frontline workers and therefore play a fundamental role in the immunization of the

278   population. Apart from being the ones that administer the vaccine, they also have to inform the

279   population about the benefits, risks, and safety of vaccines (Deem, 2017, 2018; Hoekstra &

280   Margolis, 2016). Studies have shown that healthcare providers, including nurses, remain the

281   most trusted advisors and influencers with regard to vaccination decisions (Lin et al., 2021;

282   Paterson et al., 2016). This is in contrast to our results, where nursing students perceived a gap

283   between health professionals and the community of this age group. This could be because this

284   age group usually has much less contact with health professionals compared to older

285   individuals. In addition, health professionals may lack a sufficient presence in or engagement

286   with social media to constitute important reference points for the younger population.

287   According to Paterson et al. (2016), health professionals who are themselves vaccinated or open

288   to become vaccinated are more likely to recommend vaccination to their patients. Therefore,

289   vaccination acceptance among nurses is key to ensure that they can serve as good role models

290   for vaccination in both their professional and personal lives (Manning et al., 2021). In Spain,

291   health personnel were considered a risk group and their immunization was recommended and

292   prioritized. A high vaccination rate among health professionals is important, not only for their

293   own safety, but to serve as an example and share their experience with patients (DeRoo et al.,

294   2020). However, vaccination rates against influenza among health professionals usually remain

295   below 50% (Martínez-Baz et al., 2013) and are even lower among nursing students (Hernández-

296   García et al., 2015).

297   Our findings indicate that nursing students want to be vaccinated against COVID-19, especially

298   those who have been training in real clinical settings. The literature indicates that young health

299   professionals show a great willingness to become vaccinated, mainly to protect themselves and

300   patients. Those who refuse vaccination often do so out of concerns over the vaccines' efficacy

301   and a lack of information about SARS-CoV-2 vaccines (Belingheri et al., 2021; Ledda et al.,

302   2021; Manning et al., 2021). This high level of awareness and adherence to vaccination may be

303   due to contact with the disease through clinical learning and, therefore, to the perception and

304   appreciation of risk (Belingheri et al., 2021; Costantino et al., 2020). Previous research has

305   highlighted that the belief that vaccination can protect oneself and the community is important

306   to arrive at a decision in favour of becoming vaccinated (Böhm et al., 2019). However, the

307   literature also shows that nursing students who have worked in health centres are less positive

308 about getting vaccinated compared to those who have not worked. This may be due to a feeling

309 of confidence in the face of infection (Patelarou et al., 2021).

310 Currently, global communication in real time has a great impact on people's lives (Chen et al.,

311 2020). During the pandemic, information spread rapidly, including inaccurate and misleading

312 information (Balarezo-López, 2021). Many people feel that some information was withheld,

313 and that the information was confusing while considering information published on social

314 networks more trustworthy (López et al., 2021). Vaccine hoaxes disseminated by traditional

315 media outlets and social media can have serious consequences and can prevent societies from

316 reaching the necessary herd immunity. The misinformation about COVID-19 has repercussions

317 on the population and on the management of control measures (Cuan-Baltazar et al., 2020;

318 Tasnim et al., 2020).

319 The participants of this study reported that the institutional management of the vaccine

320 programme generated uncertainty in the population because there were no clear responses from

321 the government to address the doubts present in the population. Furthermore, the vaccination

322 plan was constantly changed without explanation and discrepancies and friction between

323 regional governments and the central government emerged regarding the age-indications of the

324 different vaccines. Our results show that our sample of nursing students placed the majority of

325 the blame for the anti-vaccination sentiment on the traditional and social media. Secondary risk

326 factors were the non-prioritization of societal well-being and an underestimation of the risk of

327 serious illness.

328 Health literacy involves the knowledge, motivation, and competence of individuals to access,

329 understand, evaluate, and apply health information in order to make judgments and decisions

330 regarding health care, disease prevention, and health promotion (Sørensen et al., 2012).

331 Specifically, vaccine literacy is not simply knowledge about vaccines but also the development

332 of a less complex system for communicating and delivering vaccines. Information about

333 vaccines tends to be complex which makes communicating information to patients challenging

334 (Lorini et al., 2018; Ratzan, 2011). When information about vaccination becomes overly

335 abundant, health professionals play an essential role to help people navigate this information.

336 This requires vaccine literacy campaigns and specific training of nursing students in health

337 literacy and in the new ways to disseminate information such as social networks.

338 The results presented here are novel because they focus on a group that is underrepresented in

339 the literature, illustrating the attitudes and perceptions of this group of an important and very

340 pressing issue. The research results provide new knowledge and can be useful in similar

341 contexts.

342 One of the main limitations of this study was the low participation of first-year nursing students

343 which may have been due to some of the restrictions imposed by the pandemic itself, making

344 it difficult for those students to become motivated and involved.

345 Nevertheless, by triangulating data collection (involving interviews, discussion groups, and the

346 photovoice method) and recruiting nursing students from different years of study, the results

347 are more robust.

348 Our findings can be extrapolated to their entire age group for a scenario that is highly dynamic.

349 The study took place at a time when anti-vaccination sentiment was on the rise while increasing

350 infection numbers required just the opposite, i.e., a greater willingness to become vaccinated in

351 order to contain the pandemic. By collecting data from students at different stages of their

352 training, we could illustrate the impact on their training on their attitudes towards vaccination.

CONCLUSION

We examined the attitudes and perceptions of Spanish nursing students regarding vaccination against COVID-19. They equated vaccines with the hope of being able to regain their pre-pandemic lives and of providing protection to their loved ones. Particularly the first-hand experiences of final year students who are embedded in real clinical environments aided the development of their own nursing role as active vaccination agents and raised awareness of the risks associated with severe COVID-19. Media coverage and institutional management of vaccination was perceived as having generated both fear and uncertainty. In addition, they attributed a perceived social distance between health professionals and their community as the main reason for the observed lack of trust and communication.

We recommend the use of informal social media to communicate with members of the younger age groups. While it is necessary to raise awareness of the importance of vaccination, this should be done without necessarily focusing too much on the seriousness of the disease to prevent fear.

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