

## BRIEF REPORT

## TEACHERS' ATTITUDES AND KNOWLEDGE ABOUT THE COVID-19 PANDEMIC IN THE CANARY ISLANDS

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## ABSTRACT

A cross-sectional study was carried out to determine the teachers' attitudes and knowledge about the COVID-19 pandemic in the Canary Islands region in Spain, between May 14 - 18, 2020. A virtual questionnaire based on a validated instrument was applied. We included 1,503 surveys, which showed that teachers are unwilling to work if there is risk of infection at the school (76.6%). However, they state that they would go to work if they had the appropriate hygiene (69.2%) and protection (67.0%) measures. In conclusion, it is important to guarantee the necessary preventive measures to avoid contagion in educational centers, promoting specific training of teachers in primary prevention.

**Keywords:** Communicable Diseases; Coronavirus Infections; Hygiene; Faculty; Occupational Health; Surveillance; Health Education; Health Promotion (source: MeSH NLM).

## INTRODUCTION

As of September 21, 2020, Spain was the ninth country in the world with the most cases of COVID-19<sup>(1)</sup>, with a total of 671,468 infected persons and 30,663 deaths<sup>(2)</sup>. The first measure taken by most countries to curb the pandemic was the suspension of face-to-face activities<sup>(3)</sup>. In Spain, more than 840,000 teachers have had to use information and communication technologies (ICT) in an improvised and hurried manner to avoid slowing down the educational process<sup>(4)</sup>.

The World Health Organization (WHO) establishes recommendations for the reopening of educational centers, including hand hygiene, cleaning and ventilation of classrooms, and the use of masks. As well as the evaluation and management of students, teachers, other school personnel, tele-training facilities, etc.<sup>(5)</sup>

Planning for reopening should begin as soon as possible, establishing mechanisms to guarantee the continuity of learning in a safe manner, both for staff and students<sup>(6)</sup>. However, the possibility of contagion among students and teachers during the reopening process, and the consequent closure of the educational center, cannot be ignored<sup>(7)</sup>. Therefore, the establishment of socio-health protocols, contingency educational plans and a digitalization plan

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in the center are some of the proposals that could minimize the impact of COVID-19 in the educational environment <sup>(7)</sup>.

Because of what was previously mentioned, and due to the limited number of studies carried out on teaching personnel, we set ourselves the objective of describing the attitudes and knowledge about the COVID-19 pandemic among teaching personnel in the Canary Islands.

## THE STUDY

We conducted a cross-sectional study in the Autonomous Community of the Canary Islands in Spain, between May 14 and 18, 2020. The target population was teachers from any public or private educational institution, that is, from primary school teachers to university professors. Teachers who signed the informed consent form and answered all the questions in the questionnaire were included.

The recollection instrument is based on a study published by the research team in 2019 to learn about the attitudes and beliefs of healthcare personnel during a hypothetical influenza pandemic <sup>(8)</sup>. Because it is an *ad hoc* questionnaire, we made an adaptation for the educational sector; the research team reviewed that the questions were not ambiguous or difficult to understand, and that they correlated to the objective of the study.

To validate the instrument, we used the Delphi technique with 19 experts from different levels of the educational sector, guaranteeing at least two participants for each level (nursery school, kindergarten, primary school, secondary school, special education center, vocational training center, university, others). These experts assessed the suitability of each of the items by means of a Likert scale score of 1 to 7 points, where 1 represented disagreement and 7 represented agreement. The consensus of the experts was reached when the score for each item reached a mean greater than 5 and a standard deviation less than 2; thus, three questions were excluded from the initial questionnaire. Subsequently, to assess the level of reliability, Cronbach's alpha was calculated using the experts' scores, which resulted in a value of 0.943.

The questionnaire had 16 questions, divided into 4 sections: attitudes (3), knowledge (6), sociodemographic information (5) and employment information (2). The virtual questionnaire was created in a Google form and disseminated through social networks. Informed consent was requested from each participant, which guaranteed their anonymity at all times.

Statistical analysis was performed with R Core Team 2020 version 4.0.0. The descriptive analysis of the data was presented with frequencies and percentages. From a popula-

## KEY MESSAGES

**Motivation for the study:** The global crisis caused by COVID-19 forced the closure of educational institutions. The deconfinement and the return to teaching activity becomes a challenge for the educational community, since the virus continues to circulate and there is a possibility of resurgence. The intention of this study is to corroborate whether teachers are prepared for this challenge.

**Main findings:** Teachers believe that they should not undertake classroom training in the absence of certain hygiene and safety measures.

**Implications:** It is important to provide preventive training to the educational community to face these new pandemic circumstances.

tion of approximately 25,000 teachers, a sample size of 587 was calculated for the data to be significant at 95%, with a sampling error of 4%. Finally, 1,509 surveys were obtained, which allowed us to perform a statistical analysis with a sampling error of less than 2%, for a confidence level of 99%.

This study has been approved by the Ethics Committee for Research with Drugs of the University Hospital of Gran Canaria Dr. Negrín (CEI/CEIm HUGCDN).

## FINDINGS

### Teaching staff profile

A total of 1,503 correctly completed surveys were received. Most were women (75.6%), more than half (52.5%) were between 31 and 50 years old and lived with their partner and children (50.8%). Most were secondary school teachers (48.0%), and almost all belonged to the public education sector (91.2%) (Table 1).

### Teaching staff attitudes

The majority of teachers do not believe that adequate protection and hygiene measures against COVID-19 will be available at the school (73.3%). This fact is related to their own attitudes where they state that they would not be willing to work if there were a higher than usual risk of becoming infected at the school (76.6%) (Table 2). In addition, if there was an added risk of infecting their family members (85.0%), they would probably not go to work either. However, 69.2% would go to work under hygienic measures and 67.0% if they had adequate protective measures.

**Table 1.** Personal and work characteristics of the teachers included in the study (n = 1,503).

Characteristics	n	%
Personal characteristics		
Sex		
Men	366	24.4
Women	1,137	75.6
Age (years)		
<30	66	4.4
30-50	789	52.5
>51	648	43.1
Province		
Las Palmas	1,191	79.2
Santa Cruz de Tenerife	312	20.8
Cohabitation		
Lives with partner and children	764	50.8
Lives with a partner with no children	316	21.0
Lives alone	204	13.6
Lives with parents or other relatives	219	14.6
Employment characteristics		
Place		
Nursery 0-3 years	36	2.4
Nursery and primary education center	571	38.0
Secondary school	721	48.0
Special education center	12	0.8
Professional training center	55	3.6
University	24	1.6
Other <sup>a</sup>	84	5.6
Sector		
Public	1372	91.2
Private-concerted <sup>b</sup>	77	5.2
Private	54	3.6

<sup>a</sup> Official language schools, adult education centers, specific special education centers, rural school groups.

<sup>b</sup> Private centers that provides services to the community through agreements with the public education system.

The teachers also stated that they would not be willing to work if there was no possibility of maintaining the physical safety distance (77.4%), if the students did not have personal protection material (68.7%), if there was no hydroalcoholic solution inside the classroom (65.0%), or if they were asked to teach in groups with higher ratios of students (80.0%) (Table 2).

Overall, teachers do not agree with teaching at a classroom when there is a high risk of infecting themselves or their family (94.9%); this fact is relevant since this population lives in families with partners and children. It is noted that teachers put their responsibility to their families before their work duties (92.5%) (Table 3).

## Teaching staff knowledge

We found high percentages of knowledge about adequate measures to protect against COVID-19 (Table 4). However, 52.0% still considered that the use of gloves is an adequate measure of protection, 91.6% knew that not all masks serve to protect against infection and that not only the mouth should be covered (89.9%). Likewise, 68.4% were of the opinion that these protective measures should be maintained throughout the workday.

On the other hand, 63.1% knew that they had to disinfect their hands with hydroalcoholic solution for 20-30 seconds. However, 89.2% are of the opinion that to avoid contamination of the hands it is necessary to wash with soap and water for 40-60 seconds. In addition, 44.3% believe that it is necessary to wash hands with hydroalcoholic solution whenever they are visibly dirty. Teachers know that the physical safety distance must be maintained throughout the workday (96.3%).

As measures to be improved, only 54.7% of the teachers stated that the mask should cover the nose, mouth and chin, and only 26.8% indicated that the most effective measure to avoid contaminating the hands is the hydroalcoholic solution.

## DISCUSSION

In general, the teaching staff do not believe that they have the protection and hygiene measures in place in their workplaces and are not willing to work if there is a risk of infection. However, they state that they would be willing to work if they were provided with the appropriate hygiene and safety measures. Regarding knowledge, we observed that they are aware of the measures to protect themselves from infection, however, they need training in hygiene and infection prevention.

Regarding attitudes, we observed a general belief of lack of protection, since most of them expressed that they do not have protection and hygiene measures in their workplaces. This impression is not unique to this guild; similar results were described in a national survey on the working conditions of nurses in Spain, during the COVID-19 health crisis <sup>(9)</sup>.

Currently, children represent a low proportion of all reported cases, as they remain mostly asymptomatic or develop mild disease <sup>(10)</sup>. Teachers' concern about COVID-19 transmission could lead to absenteeism under certain circumstances described in the items explored; similar findings have been described in a similar study <sup>(8)</sup>.

Teachers should use hygienic masks that comply with the specific quality standards UNE 0064 and 0065 <sup>(11)</sup>. However, the WHO states that inadequate use of the masks, far from redu-

**Table 2.** Teaching staff attitudes toward the pandemic due to COVID-19.

During this return to teaching after the COVID-19 confinement, how likely would you be to work in the following situations?	Likely		Not likely		Doesn't know	
	n	%	n	%	n	%
If there is a higher than usual risk of becoming infected in the educational center and falling ill	195	13.0	1,152	76.6	156	10.4
If there was a higher than usual risk of infecting your family	161	10.7	1,277	85.0	65	4.3
If you had to work with adequate hygienic measures (minimum interpersonal distance, reduced ratio of students, hydroalcoholic solution)	1,040	69.2	208	13.8	255	17.0
If you had to work with the appropriate protective measures (hygienic mask, surgical mask, gowns, protective screens...)	1,007	67.0	241	16.0	255	17.0
If you had to work without adequate protective and hygienic measures	161	10.7	1,251	83.3	91	6.0
If any of the persons with whom you live with contract the disease	119	7.9	1,279	85.1	105	7.0
If your colleagues at the school had become infected with the disease	204	13.6	1,032	68.7	267	17.7
If it is not possible to maintain the physical safety distance between the students	188	12.5	1,163	77.4	152	10.1
If there is no possibility of maintaining a physical safety distance between teachers and students.	189	12.6	1,163	77.4	150	10.0
If hydroalcoholic solution is not available inside the classroom	280	18.6	977	65.0	246	16.4
If there is no hydroalcoholic solution available in the common areas.	247	16.5	1,019	67.8	236	15.7
If the students could have material for personal use	952	63.4	216	14.3	335	22.3
If the students could not have material for personal use.	182	12.1	1,032	68.7	289	19.2
If you were proposed/requested to give a greater number of direct teaching sessions to students	373	24.8	711	47.3	419	27.9
If you were asked/proposed to teach in groups with higher ratios	170	11.3	1,202	80.0	131	8.7
If you were asked to teach groups in which the students require greater proximity (students with SEN/SESN)	430	28.6	709	47.2	364	24.2

SEN/SESN: Special educational needs / specific educational support needs.

cing the risk of contagion, could even increase it <sup>(12)</sup>. In addition, all measures should be applied to prevent the spread of the pandemic <sup>(13)</sup>. According to Law 31/1995 on Occupational Risk Prevention, the Spanish public administration must guarantee workers effective protection in terms of occupational health and safety, in addition to training them in the correct use of protective equipment <sup>(14)</sup>.

Teachers would probably not go to their place of work if they were at a higher risk of becoming infected and, therefore, of infecting their family members. This risk has been demonstrated in a study carried out by the University of Granada, where a group of students composed of 20 children would have contact with more than 800 people after only two days <sup>(15)</sup>.

**Table 3.** Teaching staff attitudes toward the COVID-19 pandemic.

Please indicate if you tend to agree or disagree with the following statements	Agrees		Disagrees	
	n	%	n	%
Teaching staff have a duty to teach face-to-face, even when there is a high risk of infecting themselves or their families.	76	5.1	1,427	94.9
Teaching staff as well as healthcare personnel should be given priority over the general population to be diagnosed and receive treatment during de-escalation.	211	14.0	1,292	86.0
Teaching staff should be allowed to refuse to work with or around people with respiratory symptoms.	279	18.6	1,224	81.4
Teaching staff who refuse to perform their duties during this time of health crisis should be sanctioned in some way.	220	14.6	1,283	85.4
Responsibility at work is above their family duties.	112	7.5	1,391	92.5
Teaching staff in charge of students at health risk (immunocompromised, chronic illness, etc.) may refuse to work if they do not have adequate protection and hygiene measures in place.	1,415	94.2	88	5.8

**Table 4.** Teaching staff knowledge of the COVID-19 pandemic.

Questions	Yes		No		Doesn't know	
	n	%	n	%	n	%
To protect against COVID-19 it is necessary to:						
Hand washing with soap and water	1,490	99.2	8	0.5	5	0.3
Hand hygiene with hydroalcoholic solution	1,360	90.5	110	7.3	33	2.2
Face mask	1,395	92.8	68	4.5	40	2.7
Social distancing	1,492	99.3	5	0.3	6	0.4
Social isolation	527	35.1	820	54.5	156	10.4
Use of gloves	782	52.0	590	39.2	131	8.8
Respond to each of these questions by marking the answer that best reflects your opinion:						
All masks are suitable for protection against COVID-19.	63	4.2	1,377	91.6	63	4.2
Gloves must be worn at all times	191	12.7	1,237	82.9	75	4.4
It is only necessary to cover the mouth with the mask.	108	7.1	1,352	89.9	43	3.0
It is necessary to wash hands with hydroalcoholic solution whenever hands are visibly dirty.	667	44.3	767	51.0	69	4.7
It is necessary to wash with soap and water for 40-60 seconds.	1,341	89.2	109	7.3	53	3.5
It is necessary to keep a face mask on throughout the working day.	1,029	68.4	336	22.5	138	9.1
The physical safety distance must be maintained throughout the working day.	1,448	96.3	41	2.7	14	1.0
It is necessary to wash with hydroalcoholic solution for 20-30 seconds.	949	63.1	381	25.4	173	11.5
It is necessary to disinfect each classroom material with bleach or its derivatives after each class.	1,252	83.3	98	6.6	153	10.1
It is necessary to keep the classroom ventilated at all times during the working day.	1,403	93.3	42	2.6	58	4.0
Students can share teaching materials and books during class sessions.	30	2.0	1,410	93.8	63	4.2
Hydroalcoholic solution gel should be available in all classrooms.	1,429	95.0	38	2.5	36	2.4
It is necessary for the school community to know how to wash their hands properly.	1,491	99.2	6	0.4	6	0.4
What surface of the face does the mask have to cover?						
Mouth	2	0.1	-	-	-	-
Nose and mouth	678	45.2	-	-	-	-
Nose, mouth and chin	823	54.7	-	-	-	-
When using the mask, who does it protect?						
The individual	237	15.8	-	-	-	-
To people in the immediate surroundings	1,266	84.2	-	-	-	-
What is the most effective measure to avoid contaminating hands?						
Hand hygiene with a hydroalcoholic solution for 20 seconds.	403	26.8	-	-	-	-
Hand washing with soap and water for 20 seconds.	815	54.2	-	-	-	-
Wear gloves	285	19.0	-	-	-	-
How much physical distance must be maintained between people to avoid contagion?						
1 meter	106	7.1	-	-	-	-
2 meters	1,384	92.0	-	-	-	-
3 meters	13	0.9	-	-	-	-

Some gaps in knowledge among teachers have been described, so it will be necessary to implement training measures. We emphasize that they were aware of the basic hygiene and protection measures to be applied in the centers to prevent infection and spread of the coronavirus<sup>(13)</sup>. In addition, more than half of them consider the use of gloves as an effective protective measure against COVID-19. Therefore, it would be necessary

to insist on infection prevention measures, such as proper hand hygiene, and to standardize this practice throughout the educational community<sup>(16)</sup>.

The teaching staff is key to promoting health promotion measures, so it is recommended to include health professionals in the educational environment to provide teachers with training in prevention, thus collaborating in the adequacy of



hygiene and protection measures in the centers, in addition to helping to manage possible contagions<sup>(17)</sup>.

The major limitation of this study is that the sample covers different types of educational population, from kindergarten teachers to university teachers, in spite of which, our general conclusions encourage further research on the different characteristics of each of the different educational levels. Furthermore, all the respondents belong to an autonomous community, which prevents the extrapolation of the data to other regions with different characteristics outside the Spanish educational sphere. On the other hand, since this is an anonymous and electronic questionnaire, it is assumed that some of the interviewees do not belong to the teaching profession.

In conclusion, teachers in the Canary Islands are willing to work in the classroom as long as there are guaranteed hygiene and safety measures in their workplace; however, they

do not believe they have them at the moment. In terms of knowledge, there are certain educational gaps, which could be filled with adequate training in infection prevention.

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