



## Assessment of preventive measures application against Covid-19 in the workplace.

### Evaluation de l'application des mesures préventives contre la Covid-19 en milieu de travail.

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#### RÉSUMÉ

**Introduction :** Le nombre de cas de contaminations par le SARS-Cov-2 à Sétif (Algérie) est en constante augmentation, représentant à ce jour près de 10% de l'ensemble des cas enregistrés dans l'ensemble du pays.

**Objectifs :** Evaluer les mesures préventives prises par les établissements du secteur des services contre la propagation du virus.

**Méthodes :** Une enquête portant sur 115 établissements du secteur tertiaire a été menée dans la ville de Sétif (Algérie). Les données ont été récoltées en utilisant un questionnaire préétabli rempli auprès d'un responsable de l'établissement et par constatation directe.

**Résultats :** Une prévalence élevée (42%) de femmes mises en congé a été constatée. Des réunions en présentiel ont eu lieu dans 38% des établissements, la solution hydroalcoolique était disponible pour les employés dans 85% et pour les clients dans 4% des cas seulement. Dans plus de 70% des cas, la désinfection des surfaces, du sol et des poignées de portes se déroulait fréquemment. La distance de sécurité était respectée dans des proportions de 88% entre employés et clients, dans 66% entre employés et dans 63% entre clients. Le port du masque par tous, la majorité, certains et aucun des employés a été observé dans respectivement 15%, 17%, 39% et 29% des établissements.

**Conclusion :** Les mesures préventives contre le risque de contamination par l'infection Covid-19 prises au sein des établissements visités étaient jugées insuffisantes. Une action de sensibilisation a été initiée en vue de remédier aux manquements constatés.

**Mot clés :** Covid-19, Secteur tertiaire, Évaluation, Prévention.

#### SUMMARY

**Background:** The number of cases of SARS-Cov-2 contamination in Setif (Algeria) is constantly increasing, representing to date nearly 10% of all cases recorded throughout the country.

**Aim:** To evaluate the preventive measures taken by the service sector companies against the spread of the virus.

**Methods:** A survey of 115 service sector companies was carried out in the prefecture of Setif (Algeria). The data was collected using a pre-established questionnaire completed with one of the officials of the company and by direct observation.

**Results:** A high prevalence (42%) of women put on leave was found. Physical meetings were held in 38% of the companies, hydroalcoholic solution was available for employees in 85% and for customers only in 4%. In more than 70% of cases, disinfection of surfaces, floors and door handles took place frequently. Safety distance between employees and customers was respected in 88%, between employees in 66% and between customers in 63% of the companies. The wearing of a mask by all, the majority, some and none of the employees was observed in respectively 15%, 17%, 39% and 29% of the companies.

**Conclusion:** The preventive measures against the risk of contamination by Covid-19 infection taken in the visited companies were considered insufficient. An awareness campaign has been initiated to correct the shortcomings observed.

**Keywords:** Covid-19, Service sector, Evaluation, Prevention.

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## INTRODUCTION

Coronavirus disease 2019 (Covid-19) is a global pandemic responsible for significant mortality, affects mainly the respiratory function potentially responsible for Acute Respiratory Distress Syndrome caused by SARS-CoV-2.<sup>1</sup> The new coronavirus emerged in the city of Wuhan, China in 2019 and has now spread to 212 countries.<sup>2</sup> Just over two months since Covid-19 was first detected in Africa, the disease has now spread to nearly every country, resulting in nearly 17 000 confirmed cases and around 900 deaths across the continent.<sup>3</sup> In Algeria, 4648 cases were confirmed, 1998 recovered and 465 deaths were recorded;<sup>4</sup> hence, Algeria has the highest mortality rate among the African and Arab countries.

At this time, there's no vaccine to protect against this new virus and no medications approved to treat it.<sup>1,5</sup> Prevention is the most important response to limit the spread of this news virus.

Indeed, Setif is registered as the first wilaya (prefecture) in the East of Algeria among 14 wilaya in the number of Covid-19 contaminated cases and the 4<sup>th</sup> on a national scale.<sup>6,7</sup> Despite this pandemic, some companies are forced to continue working, so employers should follow the guidance on preparing workplaces for Covid-19.<sup>8</sup> Therefore, the current investigation aimed to evaluate the preventive measures taken by the service sector companies to reduce the spread of SARS-Cov-2 in Setif, Algeria.

## METHODS

Limited companies were authorized to work during the partial confinement period, so we visited many companies that maintained their activities in the prefecture of Setif (Algeria) to evaluate the application of preventive measures against the spread of the Covid-19 infection in the workplace and educate employers and employees to follow the good practices, so we gave them Covid-19 posters with Arabic and/or French languages that provide them recommendations agreed by WHO.

### Survey companies

A descriptive epidemiological study was carried out during April-May 2020 in 115 companies as telecommunications, pharmacies, banks, insurances, communal people's assembly and others.

We asked one of the officials to provide us the following information: 1. Number of employees allowed to take a break and the reasons for this break; 2. Employees awareness of the risk Covid-19 infection; 3. Transport of employees; 4. Work flexibility; 5. Conduct of physical and distance meetings; 6. Use of telework; 7. Existence of sanitary facilities, soap and water; 8. Disinfection of the soil, surfaces and door handle; 9. Other preventive measures taken by the employer. Nevertheless, we checked ourselves the presence or not the following preventive measures: 10. Safety distances applied between employees and customers (barriers or other), between employees, and between customers (ground marking or other); 11. Limited entry of clients; 12. Temperature control at the entrance for employees and clients; 13. Availability of hydroalcoholic solution for employees and clients; 14. Use of mask by employees and customers; 15. Existence of Covid-19 poster in the workplace.

### Statistical Analysis

Data were analyzed using the SPSS package program, version 21.0.

Descriptive statistical analysis was performed for all the data.

Most variables were categorical and are presented as absolute and relative frequencies, whereas the frequency of women and men that were put on break were calculated in each company and the total frequency means  $\pm$  standard deviation are presented.

Size of the companies were classified into three classes based on their sample size.

## RESULTS

### Investigated companies and their size, frequencies of employees who were put on break and reasons

The different companies that were investigated in our study are presented in Table 1. Most of them were pharmacies (38%) followed by insurances (27%). Little, middle and great companies represented respectively 37%, 31% and 31%.

Of 27% of employees that were on break, the high prevalence was women 42% vs 9% of men; Almost half (45%) of employees who allowed to take a break were pregnant women or with children, while 32% have a

chronic disease. Other reasons for work break were 34% (Table 1).

**Table 1.** Frequency of the investigated companies and their size, frequency of the employees that were put on break and reasons.

Investigated companies					
Pharmacies	Insurances	Banks	Communal people's assemblies	Tele-communications	Others
37% (43)	27% (31)	12% (14)	11% (13)	6% (7)	6% (7)
Size of companies		Employees on break		Reasons for work break	
Frequencies (n)		Mean $\pm$ SD (n)		Frequencies (n)	
1-4	38% (43)	Women	42% $\pm$ 45 (81)	Pregnant women or with children	45% (52)
5-10	31% (36)	Men	9% $\pm$ 25 (82)	Chronic disease	32% (37)
> 10	31% (36)	Total	27% $\pm$ 28 (115)	Others (no transport, vacation)	34% (39)

(n): number of companies

**Table 2.** Transport of employees, work flexibility, awareness of employees and customers against the spread of Covid-19, and conduct of physical or distance meeting in the workplace.

Transport		Presence	Absence
- Walking	60% (69)	<b>Work flexibility</b>	66% (76) / 34% (39)
- Own or family car	80% (92)	<b>Employee awareness</b>	11% (13) / 89% (102)
- Carpool	12% (14)	<b>Covid-19 poster at workplace</b>	57% (66) / 43% (49)
- Companies	15% (17)	<b>Physical meeting</b>	38% (44) / 62% (71)
		<b>Maximum of persons present in the meeting</b>	<b><math>\leq</math> 3 persons</b> / <b>&gt; 3 persons</b>
			77% (34) / 23% (10)
		<b>- Distance meeting</b>	56% (64) / 44% (51)

(n): number of companies.

### Work conditions during the partial confinement and awareness of employees and customers against the spread of Covid-19

Employees get to work using their own car or brought by their family in the most of the companies (80%), while they get walking in 60% or use carpool with co-workers in 12% of the companies. However, 15% of the companies provide transport for their employees (Table 2).

Working hours were flexible in two thirds of companies. Few companies (11%) have well educated their employees for the prevention of Covid-19 infection.

More than half of companies (57%) attached Covid-19 poster in the workplace.

During the pandemic period, physical meetings were held in 38% of the companies with the presence of 2 to 3 persons in 77% of the previous meetings; whereas the number of employees exceeded 3 in 23% of the physical

meetings (Table 2). However, distance meetings were adopted in over half of the investigated companies (56%).

### Hygienic conditions for employees and customers in the companies

Hydroalcoholic solution was available for employees in the most companies (85%), while it was available for customers only in 4% as was shown in the Table 3.

Exception of 2% of the companies, all the companies have sanitation; soap and water. Many companies disinfect almost every day their floor (73%), and frequently the surfaces (78%) and hand door (72%) (Table 3).

### Security measures engaged in the companies

Rare companies control the temperature of employees and customers (2%) (Table 4). However, Safety distance between employees and customers was respected in the most companies (88%), and applied between employees and between customers in almost two thirds of the companies, 66% and 63% respectively (Table 4).

The number of customers entering the companies was free

in 34%, limited in 62% and prohibited in 4% of companies.

However, wearing the mask by all the employees or the majority was noticed only in 15% and 17% of the companies respectively, while some employees wore the masks in 39% of the companies and none wore it in 29%.

Nevertheless, in all the companies only some customers used the mask (Table 4).

## DISCUSSION

The current study aimed to know the preventive measures taken by the service sector companies against the spread of Covid-19. Most service sector companies worked during the partial confinement in Setif were investigated; the majority consisted of pharmacies and assurances. Most of the investigated companies have less than 5 employees before the confinement period, which is advantageous to avoid crowdedness inside the companies.

Several interesting guidance and useful information about Covid-19 prevention have already been published for those who continued to work during the pandemic period as doctors and health workers,<sup>9,10</sup> pharmacists,<sup>11</sup> and other employees.<sup>12</sup>

**Table 3.** Availability of hydroalcoholic solution, sanitation and disinfection in the companies.

	Availability in the company						
	Hydroalcoholic solution			Sanitation (sink, toilet)		Soap and water	
	Always	Sometimes	Never	Presence	Absence	Presence	Absence
<b>For employees</b>	85% (98)	13% (15)	2% (2)	98% (113)	2% (2)	100% (115)	0% (0)
<b>For customers</b>	4% (5)	7% (8)	89% (102)				
Disinfection (times a week)	Floor		Surfaces		Door handles		
	< 3	≥ 3	< 5	≥ 5	< 5	≥ 5	
	27% (31)	73% (84)	22% (25)	78% (90)	28% (32)	72% (83)	

(n): number of companies.

**Table 4:** Preventive measures taken in the companies for employees and customers.

		Presence	Absence
<b>Entry temperature control for employees</b>		2% (2)	98% (113)
<b>Entry temperature control for customers</b>		2% (2)	98% (113)
<b>Safety distance applied between employees and customers (obstacles)</b>		88% (101)	12% (14)
<b>Safety distance applied between employees</b>		66% (76)	34% (39)
<b>Safety distance applied between customers (ground marking or other)</b>		63% (73)	37% (42)
<b>Entrance of clients in the company</b>	<b>Free</b>	<b>Limited number</b>	<b>Prohibited entry</b>
34% (39)	62% (71)	4% (5)	
<b>Use of masks by</b>	<b>None</b>	<b>Some</b>	<b>Most</b>
			<b>All</b>
Employees	29% (33)	39% (45)	17% (20)
Customers	0% (0)	100% (115)	0% (0)

(n): number of companies.

During the partial confinement, high prevalence of women allowed to take a break. Indeed, pregnant women or with children are eligible to be in exceptional leave in Algeria according to the Decree number 20-69 of March 21, 2020 related to the measures to prevent the spread of Coronavirus. Also, the employers authorized employees with chronic diseases and those who have not the transport to get working to take a break during this period.

Actually, CDC<sup>13</sup> highlighted that underlying health conditions or other recognized risk factors for severe outcomes from respiratory infections appear to be at a higher risk for severe disease from Covid-19 than people without these conditions.

The transport was the major problem for workers during the partial confinement period. In our investigation, employees used their own car or brought by their family in the most companies, or get walking to work; these transport ways are safe and avoid close contact with foreign people. However, some employees used carpool with co-workers. It is preferable to be not more than two employees in one car and open the windows for air ventilation during the transport and consider the other safety measures.

Working hours were flexible in two thirds of companies were flexibles which is less stressful in this period. In fact, some companies have suspended the clocking for the employees.

All workplaces must assess the risk in consultation with workers and look for ways to minimize the spread of the virus including social distancing of at least 1.5 meters, barriers to create space at counters, between workstations, seated areas, actively supporting flexible work arrangements mainly working from home, increasing cleaning and disinfection of high traffic areas or shared surfaces.<sup>14</sup>

In the current study, physical meetings were held in some companies (38%), where the number of person was 2 to 3 in most of the meetings, while the number exceeded 3 employees in 23% of the previous meetings; this kind of meetings will not facilitate the respect of social distance especially in the small rooms which will increase the risk of infection if anyone was already contaminated. However, during the pandemic crisis, all the companies should stop the physical meetings and only maintain the distance meetings to continue working as it was held in more than half of the companies; the employees used phone, social media, Viber, and other communication tools.

In the current investigation, only few companies have well educated their employees for the prevention of Covid-19 infection. However, Covid-19 poster providing information against the spread of the infection was not found in almost half of the companies.

In developing countries, the risk is two to twenty times higher and the proportion of infected patients frequently

exceeds 25%. However, a growing awareness of this problem prompted the World Health Organization to promote the creation of the World Alliance for Patient Safety.<sup>15</sup> Indeed, communication is a core component of disaster planning, response, and recovery. Effective disaster communication may prevent a disaster or lessen its impact, whereas ineffective disaster communication may cause a disaster or make its effects worse.<sup>16</sup> Recently, the importance of communication during this special pandemic was well discussed.<sup>17</sup>

The virus has been shown to have high interhuman transmission. In addition, it will be even more difficult to implement effective infection and control strategy, especially because most of the people infected will be in the community and not in healthcare settings.<sup>18</sup>; hence, for reducing the spread of this new virus, it is important to wash correctly and regularly the hands or use a hand sanitizer containing at least 60% of alcohol in the case of absence of water and soap as were constantly highlighted by several resource.<sup>19-21</sup>

Our results revealed that hydroalcoholic solution was available for employees in most companies, while only 4% provide this solution for customers. The companies should make an effort to provide free hand sanitizer for clients before they enter and leave the companies which will be an efficient way to decrease the Covid-19 public infection.

There are two main routes of transmission of the Covid-19 virus: respiratory and contact. Respiratory droplets are generated when an infected person coughs or sneezes. Droplets generated by infected person may also land on surfaces where the virus could remain; thus, surfaces or objects touched by infected individual can serve as a source of transmission.<sup>22,23</sup>

One of the best ways to limit the spread of Covid-19 is increasing the frequency of cleaning. Therefore, the number one rule for Covid-19 contamination control at the workplace is disinfection.

In the current study, we noticed that several companies disinfect frequently the floor, surfaces and hand doors. It seems that the virus was found up to 6 days on plastic, 5 days on glass and ceramic, 1 day on paper and cardboard, 8 hours on aluminum.<sup>1</sup> Indeed, virus present on contaminated surfaces may be another source of infection if susceptible individuals touch these surfaces and then transfer virus to mucous membranes in the mouth, eyes, or

nose.<sup>24</sup> Therefore, counters, surfaces, hand door and other objects that are frequently touched by employees and/or client should be washed and disinfected frequently.<sup>25</sup>

In our study, the mask was worn by all the employees only in 15% of the companies and by the majority of employees in 17% and none wear it in 15% of the companies while, only some customers wore the mask in all the companies.

Indeed, wearing the mask is recommended only for health workers and not for healthy people when other prevention measures were present.<sup>22</sup> Nevertheless, use of face masks by the general public is potentially of high value in curtailing community transmission. The community-wide benefits are likely to be greatest when face masks are used in conjunction with social-distancing.<sup>24</sup>

In most companies, safety distance between employees and customers was respected. Also, safety distance between employees and between customers was applied in almost of the two thirds of companies, while the other companies don't respect these distances which can increase the infection risk.

Our findings showed that almost of the two thirds of companies limited the number of customers entering, while rare companies prohibited strictly entry of customers. In fact, this security measures reduce the spread of Covid-19 virus inside the companies, mainly between employees and customers. However, what attracts our attention that outside the companies, most customers do not respect the social distance and don't wear the mask which allow the spread of the virus.

It is recommended that each person must stay away from the other person by at least 1 m,<sup>22</sup> and stay at least 2 m away from people with symptoms.<sup>26</sup> In previous studies, clusters of contaminated cases were reported following work or social gatherings where close, personal contact can occur;<sup>27,28</sup> the risk of transmission from an individual with SARS-CoV-2 infection varies by the type and duration of exposure, use of preventive measures, and the amount of virus in respiratory secretions.<sup>24</sup>

In the current study, it was comforting to see that many companies didn't give up to win the battle against Covid-19, so they adopted simple ideas and tools to reduce the risk of infection and maintained their activities during the pandemic period such as putting plastic or plexiglass on the counter to avoid direct contact with customers, making obstacle by using adhesive tape or chairs to leave their



offices away from customers (Figure 1), or prohibit strictly the client entry by placing the cash box or counter at the entrance of the company.

The above findings would explain partially why the highest Covid-19 contaminated cases in the eastern Algerian were registered in Setif. The Algerian authorities must step up in this critical time of need, so distance social must be controlled between customers and the use of the mask should be mandatory in the public areas.

In the end, implementation of efficient strategies is necessary to tackle the Covid-19 pandemic and protect the employees and public health. However, we recommend that wearing the mask is mandatory for all employees otherwise, customers can at least use face cover. Customers should clean their hands using free gel sanitizer before they enter and left the companies. Social distancing must be strictly applied to employees and to customers inside and outside of the company. Increasing the frequency of air ventilation mainly for the company that blocked their entrance for consumers. Increasing the disinfection both sides of the plastic or plexiglass barriers, change frequently the plastic as possible and stop physical meetings in the workplace.



**Figure 1.** Tools used in some companies against the spread of Covid-19. A: Adhesive tape away from the office. B: Plexiglass on the counter

## CONCLUSION

In our study, the preventive measures taken by the service sector companies seems to be insufficient to limit the spread of Covid-19. In addition, customers don't respect social distance in outside of the companies and don't wear the mask which can increase the risk of infection. However, given the high cases of infected persons recorded in Setif region, wearing the mask should be mandatory for the public and the authorities should control the social distance.

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