

## Original Article

# Water, sanitation and hygiene (WASH) in Salvadoran households, 2021

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### Agua, saneamiento e higiene (WASH) en viviendas salvadoreñas, 2021

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#### Abstract

**Introduction.** Access to safe water, sanitation, and hygiene is essential for public health and achieving Sustainable Development Goal 6. The availability of these services is a priority issue, as poor management of these services can increase the incidence of disease. **Objective.** Identify water, sanitation, and hygiene conditions in Salvadoran households in 2021. **Methodology.** A descriptive study was carried out using data from the National Health Survey of El Salvador 2021. A total of 16 585 households were analyzed using 79 variables related to access to water, sanitation, and hygiene. Classification criteria based on the Water, Sanitation, and Hygiene (WASH) methodology were used. **Results.** 67.2 % of the dwellings had a safely managed water service, while 29.1 % had a basic service, 1.5 % had limited or unimproved access, and 0.6 % relied on surface sources. In sanitation, 76.7% of the dwellings had improved sanitation facilities, while 12.6% had limited sanitation, and 6.7% had unimproved sanitation. Open defecation was still practiced in 1.9% of the dwellings. Regarding hygiene, 85.5 % of households had hand washing facilities with soap and water, but 3.1 % did not have adequate facilities. **Conclusion.** There has been progress in access to safe water, sanitation, and hygiene, but significant inequalities persist, especially in rural areas.

#### Keywords

Water, Hand Hygiene, Urban Sanitation.

#### Resumen

**Introducción.** El acceso al agua potable, saneamiento e higiene es esencial para la salud pública y el cumplimiento del Objetivo de Desarrollo Sostenible 6. La disponibilidad de estos servicios es un tema prioritario, ya que la mala gestión de ellos puede incrementar la incidencia de enfermedades. **Objetivo.** Identificar las condiciones de agua, saneamiento e higiene en viviendas salvadoreñas durante el año 2021. **Metodología.** Se realizó un estudio descriptivo utilizando datos de la Encuesta Nacional de Salud de El Salvador 2021. Se analizaron 16 585 viviendas mediante 79 variables relacionadas con el acceso al agua, saneamiento e higiene. Se utilizaron criterios de clasificación basados en la metodología «Agua saneamiento e higiene» (WASH). **Resultados.** El 67,2 % de las viviendas contaba con servicio de agua gestionado de forma segura, mientras que un 29,1 % tenía un servicio básico, además el 1,5 % tenía acceso limitado o no mejorado y un 0,6 % dependía de fuentes superficiales. En saneamiento, el 76,7 % de las viviendas poseía instalaciones sanitarias mejoradas, mientras que un 12,6 % presentaba saneamiento limitado y un 6,7 % no mejorado. El 1,9 % de las viviendas aún practicaba la defecación al aire libre. En cuanto a higiene, el 85,5 % de los hogares contaba con instalaciones de lavado de manos con agua y jabón, pero un 3,1 % no disponía de instalaciones adecuadas. **Conclusión.** Existen avances en el acceso a agua potable, saneamiento e higiene, sin embargo, persisten desigualdades significativas, sobre todo en áreas rurales.

#### Palabras clave

Agua, Higiene de las Manos, Saneamiento.

## Introduction

Water, Sanitation, and Hygiene (WASH) is a global strategy driven by the United Nations (UN) and the World Health Organization (WHO). It encompasses vital aspects of

public health and contributes to protecting population health. Universal, affordable, and sustainable access to WASH is key to meeting Sustainable Development Goal 6 (SDG 6); water and sanitation should be equitable and accessible to all.<sup>i,ii</sup>

This SDG emerges as a WHO strategy present in resolution WHA64.4 and the 2030 Agenda for the sustainability of the SDGs. It was also adopted by the UN General Assembly in July 2010, with the progressive realization of the human rights to safe drinking water and sanitation by 2025.<sup>iii</sup>

The WASH strategy is divided into households, schools, and health facilities. It provides monitoring of its components (water, sanitation, and hygiene) in all three settings through the Joint Monitoring Program (JMP) in which WHO Member States participate.<sup>i</sup>

WHO has included the components of the WASH strategy since the Organization's inception in 1948. It periodically publishes health guidelines and good practice guidelines on WASH and monitors global access to water and sanitation.

These components form one of the pillars of the 1978 Health for All strategy. Subsequently, the UN has launched a global call for actions for WASH in all health facilities,<sup>iv</sup> with commitments made worldwide under the 2030 Agenda. The target is to ensure the availability of basic water, sanitation, and hygiene services in 60 % of health facilities by the end of 2022. This target rises to 80 % by 2025 and 100 % by 2030.<sup>i</sup>

Over the years, the importance of hand washing and hygiene has been documented and evidenced.<sup>ii</sup> During the COVID-19 pandemic, hand washing was the most promoted habit in the media as part of prevention and self-care in communities;<sup>iii</sup> it is a simple activity that, when performed at the right time and in the right way, can save lives.<sup>ii</sup>

According to WHO, up to US\$16.5 in healthcare costs are saved for every dollar (US\$) invested in this strategy.<sup>iii,iv</sup> It also states that global progress has been made in meeting SDG 6; however, inequality in global access to handwashing facilities and products persists.<sup>v</sup>

In Latin America, access to drinking water is considered one of the major health problems. SDG 6 on safely managed services has not been achieved, as this requires the availability of water in the home whenever needed, proper management of excreta, avoiding common use between different households<sup>v</sup> and ensuring access to hand washing in the home.

Multiple efforts are focused on improving circularity in water management through the WASH strategy<sup>vi,vii</sup>, and these interventions have been successful in reducing the risk of diarrheal diseases in low-and middle-income countries<sup>viii</sup>.

In El Salvador, 61.7 % of the population belongs to the urban area, 53.3 % are female, and a high percentage of the young population is more than 25 %. The highest population density is concentrated in the departments of San Salvador, La Libertad, Santa Ana, and Sonsonate. According to the type of housing, most of the population lives in private or independent homes.<sup>x</sup>

Identifying the water, sanitation, and hygiene conditions in Salvadoran homes during the year 2021 is necessary to obtain representative data on these three components, which will allow visualization of strengths and areas of vulnerability.

## Methodology

This descriptive cross-sectional study aimed to identify the water, sanitation, and hygiene conditions of the dwellings included in the National Health Survey of El Salvador conducted in 2021.<sup>x</sup>

A total of 16 585 of the 20 505 households visited were considered since records with a non-response rate greater than or equal to 20 % for the variables of interest and duplicate records were excluded. For the analysis, 79 variables related to demographic, economic, social, water, sanitation, and hygiene information were used. Four indicators were created, three of which belong to the WASH services classification, and the fourth is the overcrowding index, according to the Economic Commission for Latin America and the Caribbean.<sup>xi</sup> Proportions and frequencies were used to describe the data using Microsoft Excel.

Based on the primary variables, the households were classified according to the WASH (water, sanitation, and hygiene) methodology indicators, and to construct each indicator, the categories established by the WASH<sup>i</sup> methodology were used as follows: for the water indicator, each household was categorized according to the water service it had, which could be: safely managed service, basic, limited, unimproved and with access to surface water or without service (Table 1).

For the sanitation indicator, each household was categorized according to the type of sanitation it has, which can be safely managed, including excreta management, basic, limited, unimproved, and open defecation (Table 1).

For the hand hygiene indicator, each household was categorized according to the type of handwashing facility with soap and water, which could be with access

to a basic facility, limited, or no hand-washing facility (Table 1).

It was taken into account that soap could be bar, liquid, powdered detergent, and soapy water, and did not include ashes, soil, sand, or other handwashing agents.<sup>1</sup>

Qualitative variables were analyzed using frequencies and percentages.

## Results

A total of 16 585 households participating in the National Health Survey 2021 were analyzed. Fifty-three percent of the households were headed by a woman.

Regarding the level of schooling of the heads of household, 32 % have a primary school education, while 7 % have a university education.

Sixty-three percent of the households are located in the urban area. Twenty percent belonged to the department of San Salvador, seven percent to Morazán, seven percent to Santa Ana, and seven percent to Cabañas.

Of the total number of participating households, 24 % were overcrowded, and 43 % had at least one child under five years of age.

## Access to water

Of these, 68 % belong to the urban area, and 58 % are not inhabited by children under five years of age (Table 2).

29.1 % of the households have basic water service, 1.5 % have limited service and 1.5 % have unimproved service. Eighty-two percent of the households with unimproved service are in rural areas, 13 % of which belong to the department of Sonsonate, 11 % to La Unión, and 11 % to San Salvador. Seventy-two percent of urban households have safely managed water service, and 98 % have at least basic water service. Fifty percent of households with unimproved water service have children under five years of age (Table 2).

However, 0.6 % of Salvadoran households use surface water (water from rivers, dams, lakes, ponds, streams, or irrigation canals), 82 % of these households belong to rural areas, 22 % are from the Department of Sonsonate, 16 % from Chalatenango and 15 % from Morazán. Children under five years of age live in 43 % of the households where surface water is used (Table 2). Of those surveyed, 0.1 % did not respond the origin of the water they use for consumption.

**Table 1.** Classification of water, sanitation and hand hygiene services.

Service level	Definition
<b>Water</b>	
Safely managed	Improved source water, on-site, available when needed and free of priority fecal and chemical contamination.
Basic	Improved source water, collection time not to exceed 30 minutes round trip, including queues.
Limited	Water from an improved source, with collection time greater than 30 minutes round trip, including queuing.
Unimproved	Water from an unprotected dug well or unprotected spring.
Surface water	Water from river, dam, lake, pond, stream, canal or irrigation channel.
<b>Sanitation</b>	
Safely managed	Improved sanitation facilities, not shared with other households and excreta are safely disposed of on-site or removed and treated off-site.
Basic	Improved facilities that are not shared with other households.
Limited	Improved facilities shared between two or more households.
Unimproved	Pit latrines without slab or platform, hanging latrines or bucket latrines.
Open defecation	Disposal of human excreta in fields, forests, bushes, open water bodies, beaches and other open spaces or with solid waste.
<b>Hand Hygiene</b>	
Basic	Handwashing facility with soap and water in the home.
Limited	Handwashing facility without soap and/or water at home.
No facility	No handwashing facilities at home.

Source: United Nations Children's Fund and World Health Organization, Integrating Water Quality Testing into Household Surveys: Thematic report on drinking water, UNICEF and WHO, New York, 2020. Available at: <https://washdata.org/sites/default/files/2020-10/JMP-2020-water-quality-testing-household-surveys.pdf>.

## Sanitation

Safe sanitation facilities were found in 76.7 % of the dwellings (Figure 1C), 22 % of which belong to the department of San Salvador and 42 % of which are inhabited by at least one child under five years of age (Table 3). 1.9 % of households have basic sanitation for excreta management, and 12.6 % have limited sanitation (Figure 1C).

Of the 6.7 % of the households with unimproved excreta management, 62 % belong to rural areas. Eleven percent belong to San Salvador, and the same percentage belongs to Sonsonate (Table 3).

Open defecation occurs in 1.9 % of households; of these households, 81 % belong to the rural area (4 % of all households in the rural area and 2 % in the urban area). Fourteen percent belong to the department of La Unión, 14 % to Morazán, 12 % to Cabañas, and 11 % to San Vicente. In 46 % of the households where open defecation takes place, there is at least one child under five years of age (Table 3). Of those surveyed, 0.1 % did not respond or did not know the origin of their drinking water.

## Hygiene

As shown in Figure 1D, 85.5 % of households have basic handwashing facilities with soap and water. Of these, 15 % belong to the department of San Salvador, and 45 % of households have at least one child under five years of age.

Of the households surveyed, 3.1 % do not have handwashing facilities, and half are in rural areas. The highest percentage of households without handwashing facilities is in San Salvador (24 %), La Paz (9 %), and Santa Ana (9 %). In addition, of all households without access to hand hygiene facilities, 44 % have at least one child under five years of age (Table 4).

## Discussion

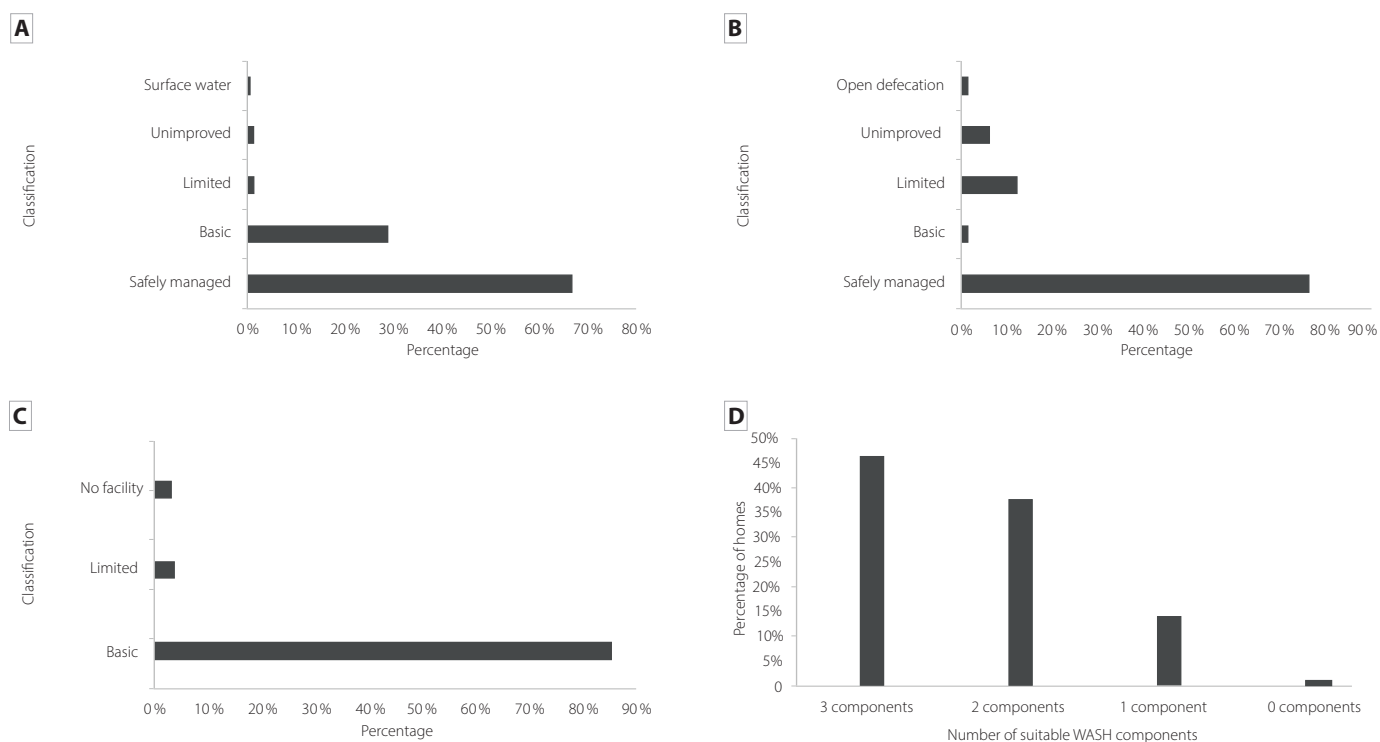
An analysis of water, sanitation, and hygiene conditions in El Salvador, conducted using data from the 2021 National Health Survey, found that less than half of the dwellings in the country have adequate water, sanitation, and hygiene conditions. More than half of the homes have access to a safely managed drinking water service, and less than a third

**Table 2.** Characterization of households by type of sanitation

Variable	Safely managed (n= 11 141))	Basic (n= 4831)	Limited (n= 249)	Unimproved (n= 253)	Surface water (n= 91)	No data (n= 20)
<b>Area</b>						
Rural	3531 (32 %)	2129 (44 %)	163 (65 %)	213 (84 %)	75 (82 %)	13 (65 %)
Urban	7610 (68 %)	2702 (56 %)	86 (35 %)	40 (16 %)	16 (18 %)	7 (35 %)
<b>Department</b>						
Ahuachapán	717 (6 %)	298 (6 %)	6 (2 %)	11 (4 %)	3 (3 %)	1 (5 %)
Cabañas	832 (7 %)	341 (7 %)	16 (6 %)	22 (9 %)	4 (4 %)	2 (10 %)
Chalatenango	640 (6 %)	268 (6 %)	10 (4 %)	24 (9 %)	15 (16 %)	4 (20 %)
Cuscatlán	487 (4 %)	218 (5 %)	6 (2 %)	2 (1 %)	2 (2 %)	-
La Libertad	651 (6 %)	385 (8 %)	18 (7 %)	17 (7 %)	2 (2 %)	-
La Paz	589 (5 %)	349 (7 %)	19 (8 %)	23 (9 %)	10 (11 %)	2 (10 %)
La Unión	629 (6 %)	302 (6 %)	20 (8 %)	29 (11 %)	3 (3 %)	-
Morazán	782 (7 %)	345 (7 %)	29 (12 %)	21 (8 %)	14 (15 %)	2 (10 %)
San Miguel	740 (7 %)	265 (5 %)	28 (11 %)	16 (6 %)	-	-
San Salvador	2295 (21 %)	932 (19 %)	31 (12 %)	29 (11 %)	6 (7 %)	4 (20 %)
San Vicente	537 (5 %)	269 (6 %)	17 (7 %)	8 (3 %)	1 (1 %)	-
Santa Ana	891 (8 %)	275 (6 %)	14 (6 %)	11 (4 %)	5 (5 %)	-
Sonsonate	614 (6 %)	335 (7 %)	15 (6 %)	32 (13 %)	20 (22 %)	2 (10 %)
Usulután	737 (7 %)	249 (5 %)	20 (8 %)	8 (3 %)	6 (7 %)	3 (15 %)
<b>Households with children &lt; 5 years old</b>						
With children	4719 (42 %)	2119 (44 %)	117 (47 %)	126 (50 %)	39 (43 %)	8 (47 %)
Without children	6422 (58 %)	2712 (56 %)	132 (53 %)	127 (50 %)	52 (57 %)	12 (53 %)

**Table 3.** Characterization of dwellings by type of sanitation

Variable	Safely managed (n= 12 718)	Basic (n= 310)	Limited (n= 2091)	Unimproved (n= 1118)	Open defecation (n= 321)	No data (n= 27)
<b>Area</b>						
Rural	4031 (32 %)	194 (63 %)	928 (44 %)	692 (62 %)	261 (81 %)	18 (67 %)
Urban	8687 (68 %)	116 (37 %)	1163 (56 %)	426 (38 %)	60 (19 %)	9 (33 %)
<b>Department</b>						
Ahuachapán	742 (6 %)	7 (2 %)	184 (9 %)	90 (8 %)	12 (4 %)	1 (4 %)
Cabañas	932 (7 %)	26 (8 %)	142 (7 %)	76 (7 %)	40 (12 %)	1 (4 %)
Chalatenango	745 (6 %)	48 (15 %)	109 (5 %)	36 (3 %)	23 (7 %)	-
Cuscatlán	541 (4 %)	8 (3 %)	108 (5 %)	53 (5 %)	3 (1 %)	2 (7 %)
La Libertad	836 (7 %)	27 (9 %)	138 (7 %)	58 (5 %)	12 (4 %)	2 (7 %)
La Paz	667 (5 %)	34 (11 %)	177 (8 %)	106 (9 %)	4 (1 %)	4 (15 %)
La Unión	726 (6 %)	30 (10 %)	80 (4 %)	101 (9 %)	44 (14 %)	2 (7 %)
Morazán	933 (7 %)	23 (7 %)	139 (7 %)	51 (5 %)	44 (14 %)	3 (11 %)
San Miguel	845 (7 %)	2 (1 %)	101 (5 %)	67 (6 %)	33 (10 %)	1 (4 %)
San Salvador	2815 (22 %)	31 (10 %)	316 (15 %)	118 (11 %)	13 (4 %)	4 (15 %)
San Vicente	565 (4 %)	24 (8 %)	143 (7 %)	63 (6 %)	34 (11 %)	3 (11 %)
Santa Ana	942 (7 %)	12 (4 %)	150 (7 %)	70 (6 %)	20 (6 %)	2 (7 %)
Sonsonate	681 (5 %)	17 (5 %)	170 (8 %)	125 (11 %)	24 (7 %)	1 (4 %)
Usulután	748 (6 %)	21 (7 %)	134 (6 %)	104 (9 %)	15 (5 %)	1 (4 %)
<b>Households with children &lt; 5 years old</b>						
With children	5341 (42 %)	134 (43 %)	996 (48 %)	498 (45 %)	147 (46 %)	12 (44 %)
Without children	7377 (58 %)	176 (57 %)	1095 (52 %)	620 (55 %)	174 (54 %)	15 (56 %)

**Figure 1.** Ranking of Salvadoran dwellings according to WASH methodology in percentages (A) Dwellings classified by type of access to water (B) Dwellings classified by type of access to sanitation facilities (C) Dwellings classified by type of hand hygiene facility (D) Percentage of dwellings by number of WASH service components.

**Table 4.** Characterization of households according to the type of handwashing facilities available.

Variable	Basic (n=14 184)	Limited (n= 647)	No facility (n= 518)	No data (n= 1236)
<b>Area</b>				
Rural	5428 (38 %)	292 (45 %)	257 (50 %)	147 (12 %)
Urban	8756 (62 %)	355 (55 %)	261 (50 %)	1089 (88 %)
<b>Department</b>				
Ahuachapán	899 (6 %)	42 (6 %)	29 (6 %)	66 (5 %)
Cabañas	1038 (7 %)	51 (8 %)	41 (8 %)	87 (7 %)
Chalatenango	831 (6 %)	32 (5 %)	32 (6 %)	66 (5 %)
Cuscatlán	610 (4 %)	37 (6 %)	13 (3 %)	55 (4 %)
La Libertad	908 (6 %)	55 (9 %)	44 (8 %)	66 (5 %)
La Paz	809 (6 %)	53 (8 %)	48 (9 %)	82 (7 %)
La Unión	856 (6 %)	48 (7 %)	20 (4 %)	59 (5 %)
Morazán	1047 (7 %)	34 (5 %)	25 (5 %)	87 (7 %)
San Miguel	884 (6 %)	39 (6 %)	34 (7 %)	92 (7 %)
San Salvador	2709 (19 %)	96 (15 %)	123 (24 %)	369 (30 %)
San Vicente	761 (5 %)	32 (5 %)	13 (3 %)	26 (2 %)
Santa Ana	999 (7 %)	51 (8 %)	47 (9 %)	99 (8 %)
Sonsonate	891 (6 %)	46 (7 %)	40 (8 %)	41 (3 %)
Usulután	942 (7 %)	31 (5 %)	9 (2 %)	41 (3 %)
<b>Households with children &lt; 5 years old</b>				
With children	6109 (43 %)	292 (45 %)	230 (44 %)	497 (40 %)
Without children	8075 (57 %)	355 (55 %)	288 (56 %)	739 (60 %)

have access to these services in a basic way. However, it was recorded that there is still an urban and rural population that consumes water from surface sources.

The Multipurpose Household Survey (EHPM, 2022) of El Salvador reported that 74.9 % of households have access to piped water. However, this figure includes households that do not receive water service in sufficient quantities, including those that have not received service for more than one month<sup>9</sup>. The WHO WASH JMP reports that 79 % of urban households in El Salvador have "safely managed" water service, and 99 % of Salvadoran households have at least "basic" water service<sup>xiii</sup>. These data are similar to the findings of the present analysis. However, the differences in these data could be because the JMP uses the EHPM and data from the National Association of Aqueducts and Sewers as the official source for the El Salvador data; however, the latter does not have full nationwide coverage. In addition, the EHPM did not record the service's availability whenever required, so the JMP platform does not have data on the total number of households in the category "safely managed water service."

El Salvador has reached the required percentage of SDG 6 for the year 2022 in terms of infrastructure to provide on-site water service. However, there are difficulties in reaching the required percentage of the water service "safely managed" category due to the lack of supply or intermittency of service, both in rural and urban areas. Currently, the government is making multiple efforts to improve the quality and coverage of the National Water and Sewerage Administration service, investing in water treatment plants and supporting the management of water sources in rural areas. In addition, non-governmental organizations are making efforts to improve coverage in the most vulnerable regions.<sup>xiii-xv</sup>

The "safely managed" water service in El Salvador is higher than that reported by Honduras, which, according to the National Demographic and Health Survey (ENDESA) in 2019, was 49.6 %. Of that percentage, 70.6 % were urban dwellings.<sup>xvi</sup> Meanwhile, in 2017, Costa Rica reported that 93.9 % of the dwellings have drinking water service "safely managed." However, no dwellings were recorded using surface water sources as the main means of supply.<sup>xvii</sup> High-income

countries have greater access to safely managed water services, exceeding 90 % coverage at the national level.<sup>xviii</sup> However, this estimate may be limited, as it does not consider aspects such as geographical coverage, diseases as outcomes, and types of contaminants. In addition, it is necessary to include at-risk populations such as those living in rural areas, low-income communities, Indigenous people, and groups marginalized by discrimination.<sup>xix</sup>

These findings can guide the generation of policies that reorganize the efforts of governments and institutions in the areas of water, sanitation, and hygiene. Such policies can be evaluated in terms of effectiveness, as demonstrated by a meta-analysis showing that WASH interventions reduce the risk of diarrhea incidence in low-and middle-income countries through point-of-use filtered water management and improved drinking fountains in facilities.<sup>viii</sup>

In terms of sanitation, this study shows that more than three-quarters of the dwellings had a safely managed sanitation system. The 2022 EHPM reported that 93.9 % of the dwellings had access to a sanitary service inside or outside the dwelling, higher values than in the present study.<sup>ix</sup>

The JMP did not report national data on sanitation in the "safely managed" category for the year 2022. However, it reported that 17 % of households in urban areas have safely managed sanitation facilities and that 88 % of Salvadoran households had basic managed sanitation services.

This study also found a higher percentage of open defecation than that reported by the JMP for rural and urban areas, which are 2 % and 0 %, respectively.<sup>xii</sup> These differences could be because the EHPM does not consider whether the use of the toilet is exclusive to household members or whether it is managed safely. The JMP for sanitation also has the EHPM as an official source.

Despite the investments made by the government and non-governmental organizations, the growth of sanitation coverage in El Salvador has been minimal, with an increase of only 0.2 %. In 2020, the sewerage coverage was 42.6 %, mainly concentrated in urban areas. In contrast, the remaining population relies on individual sanitation solutions, such as septic tanks, dry toilets, and other alternative systems.<sup>vi</sup>

According to this study's findings, safe sanitation in El Salvador is lower than that reported by Honduras. According to ENDESA, in 2019, 99 % of all households had sanitary facilities for safe excreta management; however, inhabitants who share

facilities with other people who do not live in the dwelling have been included.<sup>xvi</sup>

Concerning hygiene, most households in El Salvador have access to basic handwashing facilities, and a minority of households have limited handwashing facilities. These findings are consistent with data reported by the JMP showing that 91 % of households have basic handwashing facilities.

Access to handwashing facilities is similar to that reported by Honduras, where, according to ENDESA, in 2019, 86 % of all households possessed basic handwashing facilities.<sup>xvi</sup> However, having basic handwashing facilities does not guarantee that handwashing is carried out frequently or with proper technique; having fixed or mobile handwashing facilities and implementations has been associated with a reduced likelihood of gastrointestinal illnesses such as typhoid fever.<sup>xix</sup>

Among the main limitations of this study is the need to adapt the available data to the WASH in households methodology for its categorization, given that this was a secondary analysis. Also, water quality measurement methods were not used because they were not the objective of the National Health Survey, and the menstrual hygiene component recently included in the JMP was not measured. El Salvador also does not report official menstrual hygiene data,<sup>xii</sup> so this is an opportunity for improvement for future national surveys to address WASH fully. The present data are not comparable with most published articles, as these focus on WASH in school components conducted in countries in other regions.<sup>xx-xxiii</sup>

Interventions in these areas can contribute to reducing infectious diseases, especially in countries where climate change negatively influences their appearance and incidence.<sup>xxiv,xxv</sup> In Salvadoran households, it is necessary to emphasize drinking water treatment, create a space dedicated to hand washing, and ensure proper excreta management.

## Conclusion

All categories of the Water, Sanitation, and Hand Hygiene components were characterized through the 2021 NSS. More than half of the households have a safely managed water service, although marked inequalities persist between urban and rural areas. In terms of sanitation, most households have improved facilities, while a small proportion still practice open defecation, especially in rural areas.

In hygiene, most households have adequate facilities for hand washing with soap and water; however, a minority lack such spaces altogether. The results reflect significant progress but also show persistent gaps, especially in rural areas and among the most vulnerable populations, which require priority attention in public policies.

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## References

- i. OMS/UNICEF. Programa de Monitoreo Conjunto, WASH. 2022. Consulted date: October 10, 2024. Available at: <https://washdata.org/>
- ii. Naranjo Y, Echemendía M, Rodríguez C, Pérez L. Un recorrido por la historia del lavado de las manos. *Revista Archivo Médico de Camagüey*. 2020. 24(5): 757:767. Available at: <http://scielo.sld.cu/scielo.php?script=sci-arttext&pid=S1025-02552020000500015>
- iii. OPS/OMS. La higiene de manos salva vidas. Organización Panamericana de la Salud. 2021. Consulted date: October 10, 2024. Available at: <https://www.paho.org/es/noticias/17-11-2021-higiene-manos-salva-vidas>
- iv. OPS/OMS. Día Mundial de la Higiene de las Manos 2023. Organización Panamericana de la Salud. 2023. Consulted date: October 10, 2024. Available at: <https://www.paho.org/es/campanas/dia-mundial-higiene-manos-2023>
- v. Gordon B, Boisson S, Johnston R, Trouba D, Cumming O. Unsafe water, sanitation and hygiene: a persistent health burden. *Bull World Health Organ*. 2023;101(9):551-551A. DOI: 10.2471/BLT.23.290668
- vi. Fernández D, Muntañez A, Sarmanto N. Diagnóstico de la prestación de los servicios de agua potable y alcantarillado en El Salvador. Santiago. CEPAL. 2023. 25 p. Available at: <https://www.cepal.org/es/publicaciones/49057-diagnostico-la-prestacion-servicios-agua-potable-saneamiento-salvador>
- vii. Caputo A, Tomai M, Lai C, Desideri A, Pomoni E, Méndez H, *et al*. The Perception of Water Contamination and Risky Consumption in El Salvador from a Community Clinical Psychology Perspective. *International Journal of Environmental Research and Public Health*. 2022;19(3):1109. DOI: 10.3390/ijerph19031109
- viii. Wolf J, Hubbard S, Brauer M, Ambelu A, Arnold B, Bain R, *et al*. Effectiveness of interventions to improve drinking water, sanitation, and handwashing with soap on risk of diarrhoeal disease in children in low-income and middle-income settings: a systematic review and meta-analysis. *Lancet*. 2022;400(10345):48-59. DOI: 10.1016/S0140-6736(22)00937-0
- ix. Banco Central de Reserva. Encuesta de hogares de propósitos múltiples 2022. San Salvador. Banco Central de Reserva. 2023.64 p. Available at: <https://www.bcr.gob.sv/documental/Inicio/busqueda/135>
- x. Instituto Nacional de Salud. Encuesta Nacional de Salud, El Salvador, 2021. Ministerio de Salud, El Salvador. 2022. 472p. Available at: <https://docs.bvsalud.org/biblioref/2022/06/1372915/ens2021-informe-final-el-salvador.pdf>
- xi. CEPALSTAT. Ficha técnica - Estadísticas e Indicadores Sociales » Vivienda y Servicios Básicos Población en hogares con hacinamiento por quintiles, sexo y área. CEPAL. 2023. Consulted date: October 10, 2024. Available at: [https://statistics.cepal.org/portal/cepalstat/technical-sheet.html?indicator\\_id=4620&lang=es](https://statistics.cepal.org/portal/cepalstat/technical-sheet.html?indicator_id=4620&lang=es)
- xii. OMS-UNICEF, JMP. Programa Conjunto OMS/UNICEF de Monitoreo del Abastecimiento del Agua, el Saneamiento y la Higiene en El Salvador. OMS-UNICEF, JMP. 2023. Consulted date: October 11, 2024. Available at: <https://washdata.org/data/downloads#SLV>
- xiii. Agencia Española de Cooperación Internacional para el Desarrollo. Agua y Saneamiento, Construcción de Política Pública que garantice la sostenibilidad del subsector de Agua Potable y Saneamiento. Fase I. AECID. 2021. Consulted date: October 11, 2024. Available at: <https://aecid.sv/seccion/sectores-de-cooperacion/agua-y-saneamiento-sc/>
- xiv. Administración Nacional de Acueductos y Alcantarillados ANDA: Programas, Proyectos y Alianzas. ANDA. Consulted date: October 10, 2024. Available at: <https://www.anda.gob.sv/nuestro-trabajo/>
- xv. Naciones Unidas. Los Objetivos de Desarrollo Sostenible en El Salvador. Naciones Unidas El Salvador. 2024. Consulted date: October 10, 2024. Available at: <https://elsalvador.un.org/es/sdgs>
- xvi. OMS-UNICEF, JMP. Honduras 2019 MICS report. JMP. 2021. Consulted date: October 7, 2024. Available at: <https://washdata.org/reports/honduras-2019-mics-report>
- xvii. Mora D, Portuguez C. Agua para consumo humano en Costa Rica: de los objetivos de desarrollo del milenio a los objetivos de Desarrollo Sostenible. *Tecnología en Marcha*. 2019;32(10):26-36. DOI: 10.18845/tm.v32i10.4878

- xviii. Lee D, Gibson J, Brown J, Habtewold J, Murphy H. Burden of disease from contaminated drinking water in countries with high access to safely managed water: A systematic review. *Water Research*. 2023;242:120244. DOI: [10.1016/j.watres.2023.120244](https://doi.org/10.1016/j.watres.2023.120244)
- xix. Kim C, Goucher G, Tadesse B, Lee W, Abbas K, Kim J. Associations of water, sanitation, and hygiene with typhoid fever in case-control studies: a systematic review and meta-analysis. *BMC Infectious Diseases*. 2023;23(1):562. DOI: [10.1186/s12879-023-08452-0](https://doi.org/10.1186/s12879-023-08452-0)
- xx. Khatib M, Sinha A, Mishra G, Quazi S, Gaidhane S, Saxena D, et al WASH to control COVID-19: A rapid review. *Front. Public Health* 2022; 10:976423. DOI: [10.3389/fpubh.2022.976423](https://doi.org/10.3389/fpubh.2022.976423)
- xxi. Trivedi P, Bhavsar P, Kalpana P, Patel K, Das T, Yasobant S, et al . Dissecting WASH Assessment Tools and Recommending a Comprehensive Tool for Indian Healthcare Facilities. *Risk Manag Healthc Policy*. 2023;16:1593-1610. DOI: [10.2147/RMHP.S376866](https://doi.org/10.2147/RMHP.S376866)
- xxii. Sugita E. Water, Sanitation and Hygiene (WASH) in Japanese elementary schools: Current conditions and practices. *Pediatr Int*. 2022; 64(1):e15062. DOI: [10.1111/ped.15062](https://doi.org/10.1111/ped.15062)
- xxiii. McMichael C. Water, Sanitation and Hygiene (WASH) in Schools in Low-Income Countries: A Review of Evidence of Impact. *Int J Environ Res Public Health*. 2019 Jan 28;16(3):359. DOI: [10.3390/ijerph16030359](https://doi.org/10.3390/ijerph16030359)
- xxiv. Nguyen A, Grembi J, Riviere M, Barratt G, Hutson W, Athni T, et al. Influence of Temperature and Precipitation on the Effectiveness of Water, Sanitation, and Handwashing Interventions against Childhood Diarrheal Disease in Rural Bangladesh: A Reanalysis of the WASH Benefits Bangladesh Trial. *Environ Health Perspect*. 2024;132(4):047006. DOI: [10.1289/EHP13807](https://doi.org/10.1289/EHP13807)
- xxv. Ante-Testard P, Rerolle F, Nguyen A, Ashraf S, Parvez S, Naser A, et al. WASH interventions and child diarrhea at the interface of climate and socioeconomic position in Bangladesh. *Nat Commun*. 2024;15:1556. DOI: [10.1038/s41467-024-45624-1](https://doi.org/10.1038/s41467-024-45624-1)