



Shaping Early Handwashing Habits with Fun Soap in South Africa

Using SOAPPLAY as a Handwashing Promotion Tool for Children Aged 0 to 6 Years





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1. Introduction

Young children are notoriously susceptible to the devastating effects of hygiene deficiencies. Highly preventable hygiene-related illnesses – e.g. diarrhea and respiratory infections – continue to be a leading killer of young children in the least developed countries.¹ At least **750,000 deaths per year** can be directly attributed to inadequate handwashing practices.²

Handwashing with soap cuts diarrhea risks in half and reduces respiratory infections by one third. Yet around 2 billion people lack basic access to soap, and lifesaving handwashing routines remain a far too uncommon practice among children from disadvantaged backgrounds.³ Intervention at a young age is key to foster long-lasting healthy behaviors,⁴ and to reach Sustainable Development Goal (SDG) 3.2 – ending preventable deaths among newborns and children age 5 and below – more needs to be done to make handwashing with soap an early instilled habit and universal practice among the world's youngest and most vulnerable.

To help development practitioners, local communities, and governments instill healthy handwashing habits among young children, Eco-Soap Bank – a non-profit organization employing disadvantaged women to recycle leftover soap factory scraps and turn it into innovative handwashing tools for vulnerable populations – has launched the **SOAPLAY bar**. The soap bar – made from 100% recycled soap factory scraps/offcuts – is made in a variety of fun shapes and colors designed to appeal directly to children's deeply rooted sense of curiosity and play.⁵ Building on the latest insights from the subconscious and incentivizing realm of nudge theory, SOAPLAY bars are intended to serve as an environmental cue, or “nudge”, for handwashing among children. Extensive testing among children aged 6 to 12 have produced highly encouraging results, showing that SOAPLAY bars represent a more affordable, efficient, and desirable handwashing promotion tool for primary school aged children.⁶



This study, implemented by ForAfrika South Afrika, represents the first attempt to measure SOAPLAY's handwashing and health impacts among children aged 6 and below. The research utilized a pre-post (before and after) design and included around 2,500 children aged 0-6 years attending 53 Early Childhood Development Centers (ECDs) in the Limpopo, Mpumalanga, and Gauteng provinces, South Africa. The intervention consisted of SOAPLAY bar distributions among ECDs and parents of

¹ Global Handwashing Partnership (2020, October 14). *The Handwashing Handbook: A guide for developing a hygiene promotion program to increase handwashing with soap*. World Bank Group

² World Health Organization (2019): Burden of disease attributable to unsafe drinking-water, sanitation and hygiene, 2019 update. Geneva: World Health Organization

³ Global Handwashing Partnership (2020, October 14). *The Handwashing Handbook: A guide for developing a hygiene promotion program to increase handwashing with soap*. World Bank Group

⁴ Dangis, G., Terho, K., Graichen, J., Günther, S. A., Mieronkoski, R., Salanterä, S., Staake, T., Stingl, C., & Pakarinen, A. (2023): Hand hygiene of kindergarten children—Understanding the effect of live feedback on handwashing behaviour, self-efficacy, and motivation of young children: Protocol for a multi-arm cluster randomized controlled trial. *PLoS ONE*, 18(1)

⁵ Watson et al. (2019): Child's play: Harnessing play and curiosity motives to improve child handwashing in a humanitarian setting. *International Journal of Hygiene and Environmental Health*, Vol. 222, pp. 177-182

⁶ Eco-Soap Bank (2025): SOAPLAY: Using Soap Bars as an Environmental Cue (“Nudge”) for Handwashing among Children, Available at: <https://www.ecosoapbank.org/impact>

children attending the ECDs. Effects were measured by comparing the handwashing and health situation prior to the SOAPLAY distributions (when ECDs used regular soap)⁷ with the equivalent situation 4 weeks after SOAPLAY had been distributed. To safeguard participants and the objectivity of findings, the study implementation and data collection was handled entirely by ForAfrika South Africa and their highly experienced team of local subject specialists, field coordinators, and monitors.

The results indicate that SOAPLAY helped improve handwashing frequency, regularity, and health in all locations and across all target age groups. After starting to use SOAPLAY bars,

- Parents of children aged 2 to 4 years were 32% more likely to have observed their child washing hands with soap at home the day before (RR: 1.324, $p < 0.001$),
- Children aged 5 to 6 were 23% more likely to wash their hands with soap the last time they used the toilet in school (RR: 1.23, $p < 0.001$),
- Overall, children were 47% less likely to experience general illnesses symptoms – fever, vomiting, headaches, etc. (RR: 0.532, $p < 0.001$).

These findings – combined with feedback and reports from parents, children, and ECD staff – provide compelling evidence showing that SOAPLAY bars can help engender distinct improvements within key handwashing and health indicators among children aged 0 to 6.



⁷ All ECDs had regular soap for handwashing before the study began. Soap types included soap bars, liquid soap and soapy water.

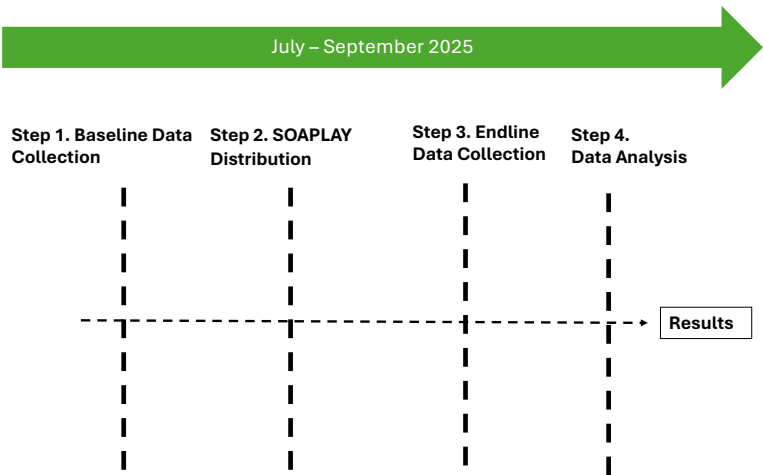
2. Study Methodology

The pre-post intervention measurements focused on change within three main outcome indicators 1) observed handwashing behavior 2) self-reported handwashing behavior and 3) Illnesses and school absenteeism. Data was collected using surveys and observations (see table 1-3 for the full list of before and after indicators).

Observations were implemented by teachers working in the target ECDs. The observation centered on handwashing frequency, engagement, and illnesses among children at the ECD centers. To aid objectivity, teachers were clearly informed that the study was not an evaluation of their ECD, but purely a research project aiming to understand the influence of this new kind of soap bar. They were also informed that the results would not affect the support they received after the study period. Observations were recorded through an endline key informant survey.

All surveys were implemented by ForAfrika South Africa through their WASH specialist and provincial field coordinators and monitors. Handwashing and health surveys were conducted among parents (of children aged 0-4), children (aged 5-6), and key informants (school staff/management). Survey participants were selected using a combination of randomization and convenience sampling. I.e. simple randomization was used as the primary sampling criteria, and convenience sampling as a secondary measure to capture additional participants – e.g., surveying a parent when they came and picked up their child from the ECD center. In total, 1,160 parents and children completed the baseline and endline surveys. 51 ECD staff completed the endline observation and key informant survey.

Figure 1. Study Design Summary



3. Results

All ECD centers had some form of soap available for handwashing at baseline (soap bars, liquid soap or soapy water). Due to the young age of the children involved, all centers also utilized some form of set toilet routines. Toilet breaks were scheduled and monitored/aided by staff, which resulted in relatively high handwashing rates at baseline.

However, despite the routines, habitual handwashing was not practiced by all children at baseline. 21% of children aged 5 to 6 reported that they did not wash their hands with soap the last time they used the toilet in school. Handwashing with soap at home was even rarer. 50% of parents to children aged 2 to 4 reported that their child did not wash their hands with soap at all at home the day before the baseline survey.

General illness symptoms were quite common at baseline, with 30% of children having some form of illness symptom in the two weeks preceding the baseline survey. Coughs, headaches, and runny noses were the most common illness symptoms. Diarrhea episodes were relatively rare.

The endline reports differed significantly from the baseline. The contrast between the baseline and endline results are summarized in the table below. The findings are then discussed further in the following sections.

Table 1. Handwashing Practices - Children Aged 5 to 6

	Baseline			Endline			Difference		
	n	x	%	n	x	%	%	p	Effect
<u>Did you wash your hands with soap the last time you used the toilet in school?</u>									
	248			187				< 0.001	$\phi = 0.236$
Yes		204	82%		182	97%	18%		
No		44	18%		5	3%	-85%		

How many times did you wash your hands during your last full day of school?

	258			189				<0.001	$\phi c = 0.351$
0 times		18	7%		0	0%	-100%		
1 time		37	15%		7	4%	-75%		
2 times		84	34%		34	18%	-47%		
3 times		40	16%		41	22%	34%		
4 times		24	10%		39	21%	113%		
5 times or more		55	22%		68	36%	62%		

How often do you wash your hands with soap after using the toilet in school?

	258			189				<0.001	$\phi c = 0.301$
Never		20	8%		0	0%	-100%		
Very Rarely		6	2%		0	0%	-100%		
Rarely		21	8%		5	3%	-69%		
Sometimes		46	19%		18	10%	-49%		
Often		52	21%		65	34%	64%		
Very Often		36	15%		36	19%	31%		
Always		77	31%		65	34%	11%		

Table 2. Handwashing Practices - Children aged 2 to 4 (parent reports)

	Baseline			Endline			Difference		
	n	x	%	n	x	%	%	p	Effect
<u>Did your child wash his/her hands with soap yesterday?</u>									
	451			225				< 0.001	$\phi = 0.152$
Yes		224	50%		148	66%	32%		
No		227	50%		77	34%	-32%		

How many times did your child wash his/her hands with soap yesterday?

	451			216				<0.001	$\phi c = 0.551$
0 times		238	53%		0	0%	-100%		
1 time		25	6%		8	4%	-33%		
2 times		71	16%		54	25%	59%		
3 times		54	12%		90	42%	248%		
4 times		24	5%		33	15%	187%		
5 times or more		39	9%		31	14%	66%		

How often do you feel your child washes his/her hands with soap after using the toilet?

	451			255				<0.001	$\phi c = 0.500$
Never		60	13%		0	0%	-100%		
Rarely		52	12%		4	2%	-86%		
Sometimes		130	29%		24	9%	-67%		
Most of the time		79	18%		98	38%	119%		
Almost always		38	8%		46	18%	114%		
Always		92	20%		83	33%	60%		

How often do you feel your child washes his/her hands with soap before eating?

	451			255				<0.001	$\phi c = 0.367$
Never		49	11%		0	0%	-100%		
Rarely		48	11%		5	2%	-82%		
Sometimes		113	25%		35	14%	-45%		
Most of the time		72	16%		78	31%	92%		
Almost always		38	8%		42	16%	95%		
Always		131	29%		95	37%	28%		

How often do you feel your child washes his/her hands with soap after playing outdoors?

	451			255				<0.001	$\phi c = 0.424$
Never		69	15%		0	0%	-100%		
Rarely		61	14%		13	5%	-62%		
Sometimes		162	36%		46	18%	-50%		
Most of the time		50	11%		73	29%	158%		
Almost always		32	7%		50	20%	176%		
Always		77	17%		73	29%	68%		

Table 3. Health Outcomes

	Baseline			Endline			Difference		
	n	x	%	n	x	%	%	p	Effect
<u>Illnesses</u>									
Children missing school days due to illness	831	160	19%	501	87	17%	-10%	0.39	$\phi = 0.02$
School days missed due to illness		388			188		-19.7%	0.013	$e\beta = 0.8$
Children experiencing diarrhea symptoms	831	57	7%	501	44	9%	28%	0.111	$\phi = 0.05$
Children experience other forms of illness symptoms	831	249	30%	501	80	16%	-47%	<0.001	$\phi = 0.16$
<u>Do you have soap for handwashing at home?</u>									
	564			312				0.006	$\phi = 0.09$
Yes		330	59%		212	68%	16%		
No		234	41%		100	32%	-23%		

3.1 Change in Handwashing Practices – Children age 2 to 4

4-weeks after the SOAPLAY distributions, 90% of parents reported a positive change in their child's handwashing behavior, and 83% felt their children washed their hands more, or a lot more often. This sense was supported by handwashing frequency and regularity reports, showing a noticeable increase within both aspects.

Figure 2. Have you noticed any positive changes in your child's (aged 2 to 4) handwashing behavior since starting to use SOAPLAY bars?

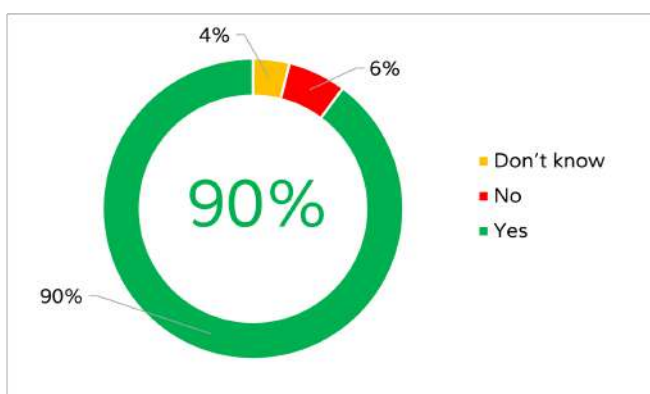


Figure 3. Since receiving SOAPLAY bars, have you noticed your child (aged 2 to 4) wash his/her hands with soap:

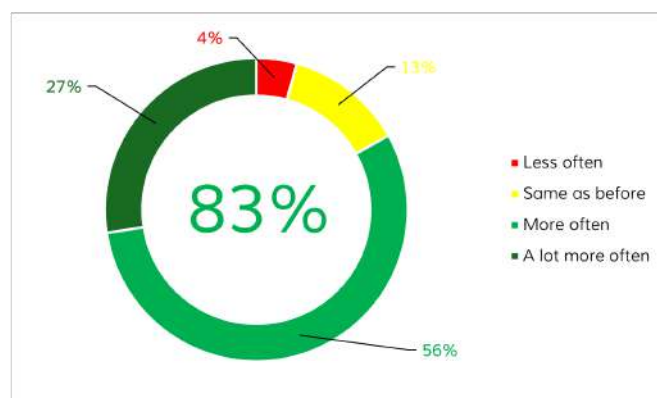
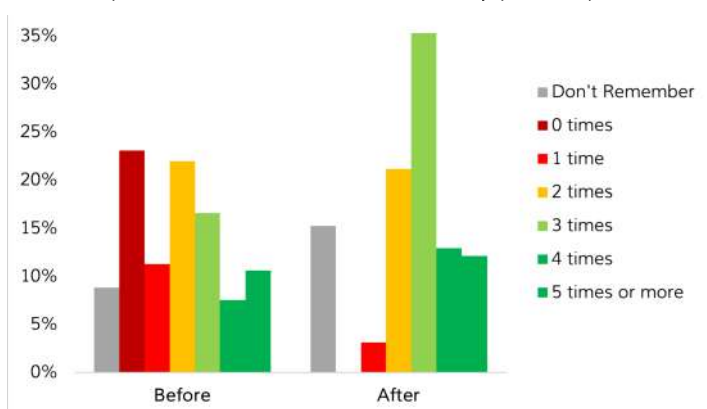


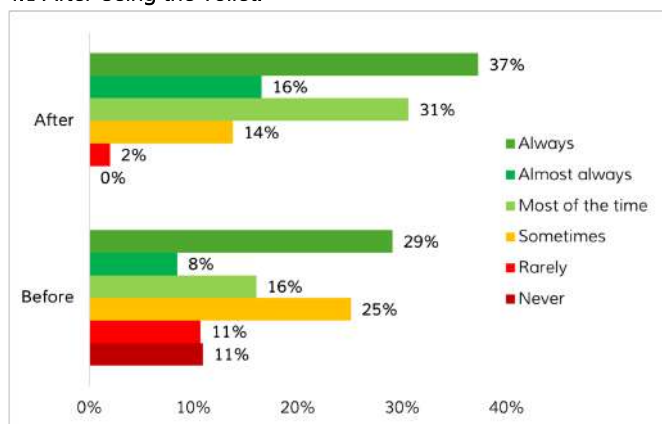
Figure 4. Handwashing frequency children aged 2 to 4 (how many times did your child wash their hands with soap yesterday)?



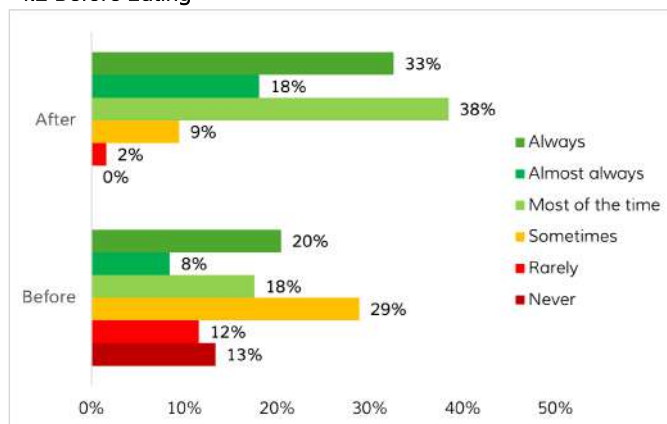
As reflected in figure 4, the proportion of parents that did not see their child wash their hands with soap at all the previous day dropped from 23% at baseline to 0% at endline. A similar trend could be found in the handwashing regularity reports, which indicated a clear reduction in children that never or rarely washed their hands after using the toilet, before eating, and after playing outdoors.

Figure 5. Handwashing Regularity (how often does your child wash their hands with soap) – children aged 2 to 4

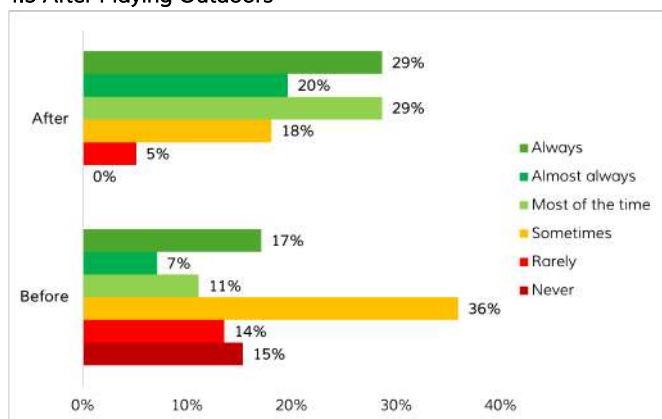
4.1 After Using the Toilet.



4.2 Before Eating



4.3 After Playing Outdoors



Almost all parents noticed a positive change in their children's approach towards handwashing after they started using SOAPLAY. When asked to reflect on potential changes in their child's handwashing attitudes and engagement; 96% of parents felt like handwashing had become a more fun activity for their child; 95% felt their child had a more positive attitude towards handwashing; 96% noticed their child started washing their hands more carefully; 89% felt like their child talk more about handwashing; and, 85% felt their children had become more likely to encourage others to wash their hands with soap. A majority rated these improvements as large.⁸

3.2 Self-reported Handwashing Practices - children aged 5 to 6

Self-reported data from the 5- to 6-year-olds followed the same trends as the parent surveys. 98% of children aged 5 to 6 reported a positive change in their own handwashing behavior since starting to use SOAPLAY bars, and 91% said they washed their hands more, or a lot more, often. The results also showed an 15-percentage point increase in children that washed their hands with soap the last time they used the toilet in school. The baseline vs. endline (before and after) comparison revealed key increases in both handwashing frequency and regularity (see figure 8 and 9).



⁸ The median answer was 6 on a 7 point scale for all categories - where 1 represented very small and 7 represented very large

Figure 6. Since receiving SOAPLAY bars, have you washed your hands with soap:

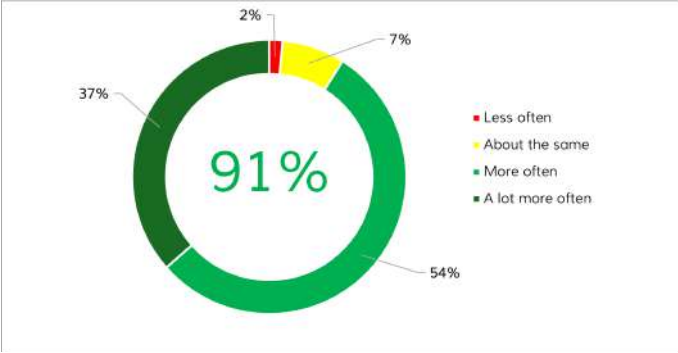


Figure 7. Did you wash your hands with soap the last time you used the toilet in school?

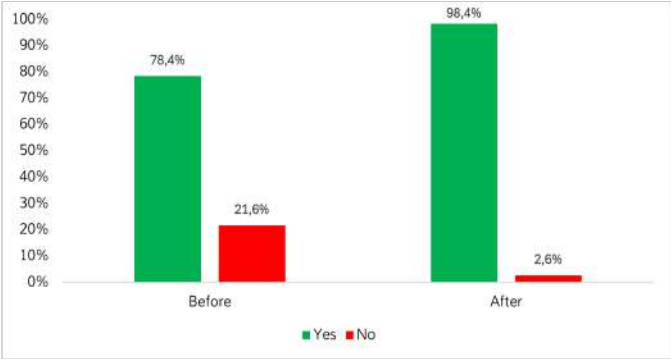


Figure 8. How many times did you wash your hands during your last full day of school?

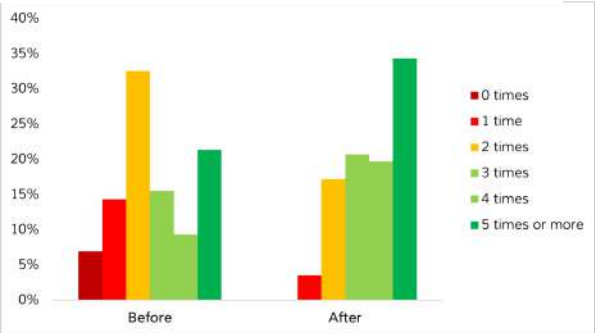
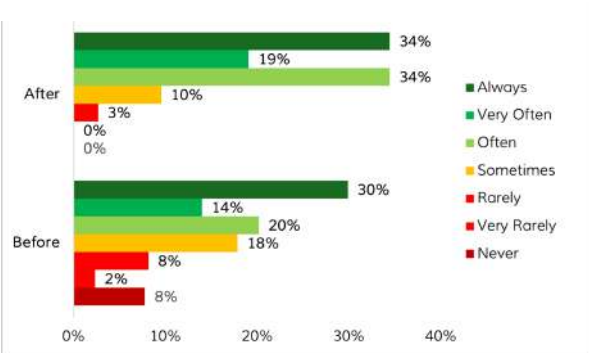


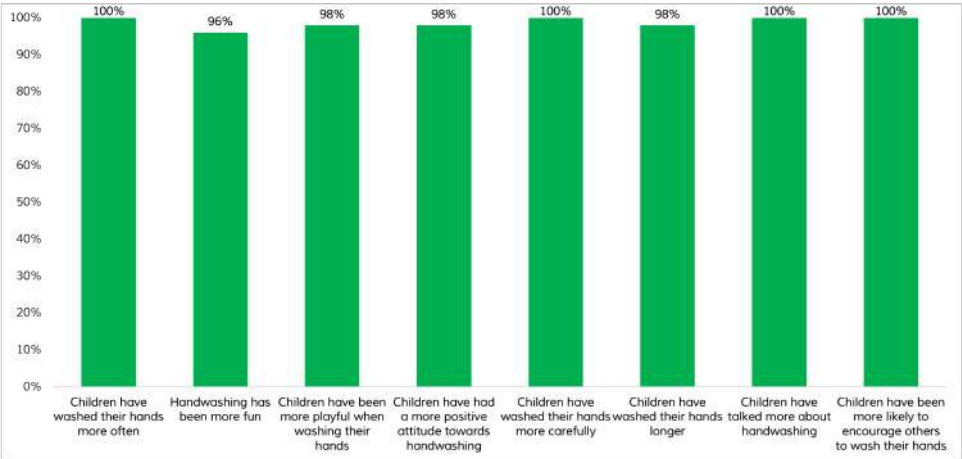
Figure 9. How often do you wash your hands with soap after using the toilet in school?



3.3 Key Informants Observations – ECD Center Staff

The experiences of parents and children were supported by the ECD center staff observations. 100% of staff noticed that children in the centers were washing their hands with soap more often after they started using SOAPLAY bars; 96-98% observed children being more playful and having more fun whilst washing their hands; 98-100% observed that children washed their hands longer and more carefully; and 100% had observed children being more eager to talk about handwashing and more likely to encourage others to wash their hands with soap. The average strength of change was assessed to be large.⁹

Figure 10. Key Informant Observations (ECD Centers)



⁹ The median and average answer was 6 on a 7-point scale for all categories - where 1 represented very small and 7 represented very large.

3.4 Health and Wellbeing

As handwashing practices improved, health benefits followed. 96% of ECD center staff and 80% of parents noticed an overall improvement in the children's health and wellbeing after they started to use SOAPLAY bars. At the ECD centers, 96% of staff reported that children were less ill after they started using SOAPLAY bars; 40% of staff noticed children were having fewer diarrhea episodes; and 31% felt that children were missing fewer days of school due to illness.



The observations were supported by health data, showing that the proportion of children experiencing general illness symptoms (fever, headaches, vomiting, etc.) in the preceding 2 weeks decreased from **30%** at baseline to just **16%** at endline. There was also a statistically significant decrease in the number of school days missed in the preceding two weeks, going from 0.47 days missed per child at baseline to 0.37 days missed at endline. The decrease represents a 19.7% reduction in the rate of student absenteeism for illness-related reasons (IRR: 0.803, $p = 0.013$, 95% CI: 0.676 to 0.955).¹⁰ Reported diarrhea levels remained at a relatively constant, low level at both the baseline and endline (7% and 9%).

Figure 11. Did you experience any general illness symptoms (fever, vomiting, headache etc.) in the preceding 2 weeks?

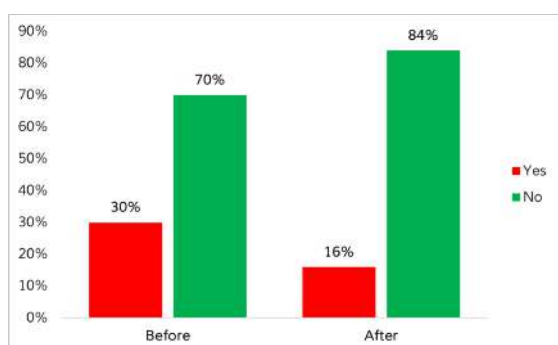
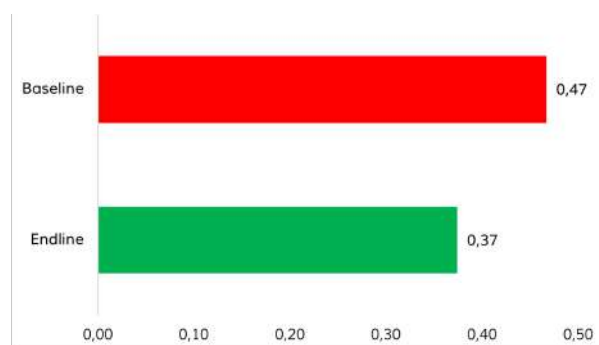


Figure 12. Average number of school day missed per child in the preceding 2 weeks



4. Conclusions

The parents, children, and staff represented in this report provide an overwhelmingly positive view of SOAPLAY's ability to engage and encourage handwashing practices among children under the age of 6.

After starting to use SOAPLAY bars,

- Parents of children aged 2 to 4 years were 32% more likely to have observed their children washing their hands with soap at home the day before (RR: 1.324, $p < 0.001$)
- Children aged 5 to 6 were 23% more likely to have washed their hands with soap the last time they used the toilet in school (RR: 1.23, $p < 0.001$)

In addition,

- 100% of ECD center staff reported that children washed their hands more often after they started using SOAPLAY bars
- Over 90% of parents to children aged 2 to 4 noticed distinct improvements in their children's handwashing practices



¹⁰ Due to overdispersion of the data set - caused by a few students missing several days, while most missed none, which meant the variance exceeded the mean - negative binomial regression was used to analyze the results. The analysis found a 19.7% reduction in the number of school days missed per student. The 95% confidence interval ranged from 0.67 to 0.96, and the associated p-value was 0.013.

- 91% of children aged 5 to 6 reported to wash their hands more, or a lot more, often
- 96% of ECD center staff and 80% of parents noticed an improvement in the health and well-being of the children
- Overall, children were 47% less likely to experience general illnesses symptoms (fever, vomiting, headaches, etc.,) in the two weeks preceding the endline study compared to the baseline (RR: 0.532, $p = <0.001$)

The findings suggest these young children underwent a quite remarkable handwashing journey in the weeks after they started using SOAPLAY bars. Handwashing rates improved, illness levels decreased and, perhaps most importantly of all, their inherent curiosity and playfulness seem to have been sparked.

The nudge-based idea behind the SOAPLAY bar is to instill and nurture early handwashing practices, laying the foundations for a sustained, healthy behavior. Not through explicit demands or rules, but through a gentle, subconscious push towards what young children value the most – playing around and having fun. Introducing this practice at a very early age can help establish a true habit, making handwashing with soap a natural part of children's everyday lives as they develop and grow. Long-term, these handwashing habits will save lives and ensure that more families can enjoy a prosperous and healthy future.

Attachment 1. Feedback and Parent Testimonials

Parents of children 0 to 4 years old:

- 99.4% of parents want to continue using SOAPLAY bars in the future
- 99.3% of parents recommend SOAPLAY bars for other families
- 86% rate the soap as better or much better than other soap bars they used in the past
- 88% of parents rate the quality of the soap as good to very good

Children 5 to 6 years old:

- 98% of children want to continue using SOAPLAY bars to wash their hands
- 98% of children recommend SOAPLAY bars for other children
- 89% of children preferred SOAPLAY bars over regular soap bars
- 82% of children preferred SOAPLAY over other soap they used in the past

ECD staff:

- 100% of ECD staff want to continue using SOAPLAY bars in the future
- 100% of ECD staff recommend SOAPLAY bars for ECD centers
- 96% of ECD staff rated SOAPLAY as better, or much better, than other soap they used in the past
- 96% of ECD staff rated the quality of the soap as good, or very good.

Testimonials:

I'm really happy with how it [SOAPLAY] has helped my child see hygiene in a fun way, she really likes the shape of the soap, and it makes her excited every time she has to use it to wash her hands – Mother to a 4-year-old daughter, Gauteng, South Africa

I love the soap. The shape makes it interesting for the children to wash their hands. My child enjoys washing her hands with the soap and she looks like she is having fun while washing her hands. It also smells nice – Mother to a 4-year-old daughter, Mpumalanga, South Africa

My child loves the soap and refers to it as the soap from creche [nursery] and refuses to use any other soap to wash his hands – Mother to a 4-year-old son, Limpopo, South Africa

We love the soap, even us as parents are using the soap. It smells good and I love the quality also the fact that it lasts longer – Mother to a 5-year-old son, Limpopo South Africa

It is the best soap that I have ever used and I love it! – ECD Center Teacher, Limpopo, South Africa

Truly speaking our children didn't like to wash their hands before, now they do! – Mother to a 4-year-old son, Mpumalanga, South Africa

It helps the kids to love washing hands! – Mother to a 4-year-old son, Mpumalanga, South Africa

The kids are more excited to wash hands – Mother to a 4-year-old daughter, Mpumalanga, South Africa

The soap has been beneficial because you don't have to remind the children to wash their hands – Mother of a 1-year-old son, Limpopo, South Africa

Children are no longer experiencing sickness like before – Mother of a 3-year-old daughter, Gauteng, South Africa

We no longer experience diarrhea and vomiting – Mother to a 4-year-old daughter, Gauteng, South Africa