

## RESULTS

### Demographic Characteristics of the study participants

**Table 1: Socio-demographic data of participants (Mothers) n = 800**

Variables		Intervention		Control	
		N	%	N	%
Age	15 – 24 years	151	37.8	168	42.0
	25 – 34 years	194	48.5	192	48.0
	35 years and above	55	13.8	40	10.0
Educational level	Not educated	55	13.8	-	-
	Primary	144	36.0	180	45
	Junior Secondary	110	27.5	146	36.5
	Senior Secondary	75	18.8	71	17.8
	College	16	4.0	3	0.8
Ethnic group	Mandinka	211	52.8	193	48.3
	Fula	76	19.0	81	20.3
	Wolof	31	7.8	44	11.0
	Jola	43	10.8	51	12.8
	Sarahuleh	16	4.0	12	3.0
	Others	23	5.8	19	4.8
Employment status	Employed	47	11.8	68	17.0
	Not Employed	353	88.2	332	83.0
Parity	Para 1	87	21.8	80	20.0
	Para 2	79	19.8	84	21.0
	Para 3	64	16.0	77	19.3
	Para 4	74	18.5	71	17.8
	Para 5 & above	96	24.0	88	22.0
Marital status	Married	389	97.3	387	96.8
	Single	11	2.7	13	3.2
Family type	Nuclear	189	47.3	156	39.0
	Extended	211	52.8	244	61.0
Religion	Islam	389	97.3	387	96.8
	Christianity	11	2.7	13	3.2

The results of the demographic characteristics of mothers who were recruited in this study are contained in Table 1. The mean age of participants was 26 years. Many of the participants 144 (36.0%) and 180 (45.0%) in the intervention and control groups respectively had primary education as their highest educational qualification. Only 16 (4.0%) and 3 (0.8%) of them had college degree as their highest educational qualification. About 14% (n = 55) of the

intervention group did not have any formal education compared to all of the participants in the control had at least a primary education. However, more participants in the intervention group had college (n= 16, 4%) as their highest level of education compared to only 0.8% (n = 3).

Many of the participants 211 (52.8%) and 193 (48.3%) in the intervention and control groups respectively were of the Mandinka ethnic group. About 353 (88.2%) and 332 (83.0%) in the intervention and control groups respectively were not employed. About a quarter of the intervention (n = 96, 24.0%) and control (n = 88, 22.0%) groups had five or more deliveries.

### Demographic characteristics of the Participants' Neonates

**Table 2: Demographic Characteristics of neonates (n = 800)**

Variables		Intervention		Control	
		N	%	N	%
Gestational Age	Term	260	65.0	315	78.8
	Pre-term	0	0.0	0	0.0
	Post-term	140	35.0	85	21.2
Birth Weight	Normal	375	93.8	350	87.5
	Low	18	4.4	24	6.0
	Overweight	7	1.8	26	6.5
Baby breast fed immediately	Yes	149	37.3	159	39.8
	No	251	62.8	241	60.2
Duration before breast feeding	< 1 hours	178	44.5	174	43.5
	1 - 2 hours	63	15.8	69	17.3
	≥ 3 hours	159	39.7	157	39.2

In the result presented in Table 2, the mean age of the babies of participants in the intervention and control groups was 2 days. More of the babies of the mothers in the control (n = 315, 78.8%) group were of term gestational age compared to that of those in the intervention (n = 260, 65.0%) group. Most of the babies were of normal delivery, had normal birth weight and breast feeding initiated less than an hour after delivery.

## Practice of Hand washing among the Participants

**Table 3: Differences in hand washing practice within and between the study groups (n = 800)**

Groups	N	Pretest (A)	Posttest 1 (B)	B – A	Posttest 2 (C)	C – A	Diff. b/w cont and Int $\bar{X}$ diff. one	Diff. b/w cont and Int $\bar{X}$ diff. two
Control	400	17.73	17.76	0.03	17.65	0.08	1.47	.11
Intervention	400	17.29	18.79	1.5	17.38	0.09		

Table 3 Illustrated the mean differences between participants' pre-test, post-test one and two scores on practice of hand washing among the intervention and control groups respectively. The within group comparison showed that the mean difference in the practice of hand washing between the control group's posttest 1 and pretest (B-A) was equal to 0.03 and that of their posttest 2 and pretest (C-A) was 0.08 respectively. Similarly, the mean differences between the intervention group (B-A) was found to be 1.50 and that of its (C-A) was 0.09. This show that, the differences in mean of the two groups was noticeably different. However, the mean differences in the practice of hand washing between the intervention and control groups were higher ( $\bar{X}$  diff = 1.47 and 0.11) than what were obtained in the within group comparison of the control group. Therefore, with this result exposure to maternal hand washing promotion could significantly affect maternal hand washing practice. This result was further exposed to MANCOVA to reveal if there exist any statistically significant differences between the two groups as seen in table 4.

**Table 4: Effect of maternal hand washing promotion intervention on participants' practice (n = 800)**

Test type	Groups	N	Mean	SD			
Posttest one	Intervention group	400	18.79	2.89			
	Control group	400	17.76	2.84			
	Total	800	18.27	2.91			
Posttest two	Intervention group	400	17.38	3.11			
	Control group	400	17.65	2.73			
	Total	800	17.52	2.93			
Source	Dependent Variables	Type sum of square	III of square	Df	Mean square	F	Sig.
Corrected model	Posttest one	1149.44	2		574.72	81.15	0.000***
	Posttest two	749.31	2		374.65	48.75	0.000***
Intercept	Posttest one	3070.79	1		3070.79	433.59	0.000***
	Posttest two	3063.58	1		3063.58	398.68	0.000***
Covariate	Posttest one	938.29	1		938.29	132.48	0.000***
	Posttest two	735.00	1		735.00	95.65	0.000***
Group	Posttest one	283.06	1		283.06	39.96	0.000***
	Posttest two	2.90	1		2.90	378	0.539
Error	Posttest one	5644.50	797		7.08		
	Posttest two	6124.32	797		7.68		
Total	Posttest one	274011.00	800				
	Posttest two	252469.00	800				

The result of the multivariate analysis of covariance (MANCOVA) presented in Table 4 shows that, the mean score of the intervention group during the posttest 1 ( $\bar{X} = 18.76$ ;  $SD = 2.89$ ) was significantly higher than that of the control group ( $\bar{X} = 17.76$ ;  $SD = 2.84$ ,  $F(1, 797) = 39.96$ ,  $p < .05$ ). However, in the post-test 2, the reverse was found to be exhibited as the control group was found to have had a higher mean score ( $\bar{X} = 17.65$ ;  $SD = 2.73$ ) than the intervention group ( $\bar{X} = 17.38$ ;  $SD = 3.11$ ,  $F(1, 797) = 378$ ,  $p < .05$ ) which showed a drop in the practice of hand washing of participants in the intervention group during the post-test two as against the practice they exhibited during the post-test one. This decrease in practice performance of the intervention group was surprising as it is different from the anticipated results due to the reinforcement they received at the end of post-test one.

### Association between maternal demographic characteristics and washing practice during posttest 1 and 2

**Table 5: Inter correlation matrix of all the variables for Intervention one and two of Practice (n = 800)**

	Hand washing Posttest 1	Hand washing Posttest 2	Age	Edu lev	Ethnic	Emp Sta	Parity	MS	Fam typ	Religion
Age	.023	.000	1							
Education level	.016	.058*	-.069	1						
Ethnic group	.035	-.005	-.028	.053	1					
Employment status	.096*	.047	-.074	-.111	-.072	1				
Parity	.049	-.035	.698*	-.182	-.128	.003	1			
Marital status	-.064	.041	-.054	.021	.043	.047	-.135	1		
Family type	-.017	-.024	.033	-.010	-.007	-.091	.050	-.050	1	
Religion	-.012	.042	.134	.155	.309	-.106	-.026	.163	.031	1
Mean	18.27	17.52	26.21	1.68	2.13	1.85	3.02	1.03	1.56	1.03
SD	2.91	2.93	5.46	0.92	1.48	0.35	1.46	0.21	0.49	0.18

Key: Edu lev = Education level

Emp Sta = Employment Status

MS = Marital Status

Fam type = Family type

SD = Standard Deviation

Table 5 shows that the participants' hand washing practice correlated best with their employment status in posttest 1 ( $r = .096$ ,  $p < .01$ ) and level of education in posttest 2 ( $r = .058$ ,  $p = .05$ ). So it is likely that these variables when combined with the health education intervention will best predict the practice of hand washing of the participants.

## Predictors of Maternal Hand washing Practice

**Table 6: Regression Model Summary of all the predictor variables: for Intervention one and two of Practice (n = 800)**

	Model	R	R square	Adjusted R square	Std error of the estimate	
	1	.140 <sup>a</sup>	.020	.010	2.90165	
	2	.103 <sup>a</sup>	.011	.001	2.93218	
	Source of Variance	Sum of Squares	Df	Mean square	F	Sig.
<b>Intervention one</b>	Regression	134.071	8	16.759	1.990	.045 <sup>b</sup>
	Residual	6659.878	791	8.420		
	Total	6793.949	799			
<b>Intervention two</b>	Regression	72.874	8	9.109	1.059	.390 <sup>b</sup>
	Residual	6800.765	791	8.598		
	Total	6873.639	799			
	Variables	Regression weight				
		B	Std error	Standard. Coef. (β)	t-value	Sig.
<b>Intervention one</b>	(Constant)	17.169	1.139		15.078	.000
	Age	-.005	.027	-.009	-.188	.851
	Level of education	.119	.115	.038	1.037	.300
	Ethnic group	.107	.073	.054	1.453	.147
	Employment status	.865	.299	.104	2.898	.004
	Parity	.122	.102	.061	1.199	.231
	Marital status	-.842	.483	-.063	-1.744	.081
	Family type	-.077	.209	-.013	-.369	.712
	Religion	-.168	.623	-.010	-.270	.787
<b>Intervention two</b>	(Constant)	15.388	1.151		13.373	.000
	Religion	.572	.629	.035	.908	.364

The result in Table 6 shows that the predictor variables had very small positive correlation with the practice of hand washing during interventions one ( $R = .140$ ,  $p < .05$ ) and two ( $R = .103$ ,  $p < .05$ ). Overall, the model accounted for 10% and 1% of the variations seen in the hand washing practice during the posttest 1 and 2 of intervention one and two respectively. However, the intervention 1 and employment status of the study participants were the best predictors of hand washing practice ( $p = 0.004$ ). This indicates that the first intervention is a significant fit of the data (the 10%) while surprisingly, the second intervention is not a significant fit for the data (1%) as it accounted for a variance that can be explained as not being a significant amount.

### Infections among the Neonates of the Study Participants

**Table 7: Neonatal infections before, during and after intervention (n = 800)**

	Pre-test		Post-test 1		Post-test 2	
	Control	Intervention	Control	Intervention	Control	Intervention
Diarrhoea	5 (1.2)	7 (1.7)	64 (16.0)	17 (4.3)	88 (22.0)	26 (6.5)
ARI	6 (1.5)	4 (1.0)	51 (12.8)	19 (4.8)	60 (15.0)	17 (4.3)
Sepsis	7 (1.7)	8 (2.0)	40 (10)	53 (13.2)	72 (18.0)	60 (15.0)
	Currently sick		Currently sick		Currently sick	
Status of the baby	0 (0)	0 (0)	10 (2.5)	6 (1.5)	81 (20.3)	9 (2.3)

Table 7 shows that the more of neonates of the study participants in the control showed signs of diarrhoea during the post-test 1 ( $n = 64$ , 16%) and 2 ( $n = 88$ , 22%) than that of those in the intervention group ( $n = 17$ , 4.3%) and ( $n = 26$ , 6.5%) respectively. Similar trend was also seen in the prevalence of ARI among the neonates. The prevalence of sepsis was high in both among the neonates of the mothers in the control and intervention groups especially during the post-test 2, 18% and 15% respectively. However, the control group had higher number of neonates who were sick during the post-tests 1 ( $n = 10$ , 2.5%) and 2 ( $n = 81$ , 20.3%) than those in the intervention group ( $n = 6$ , 1.5%) and ( $n = 9$ , 2.3%). Neonatal infections were low in both groups during the pre-test because it was the first day of delivery and signs of infections might not be detected

**Table 9: Inter correlation Maternal Demographic Variables for Neonatal Infections (NIF) in Post-test 1 and 2 (n = 800)**

	NIF Post-test one	NIF Post-test two	Age	Edu lev	Ethnic	Emp Sta	Parity	MS	Fam typ	Religion
Age	-.026	-.047	1							
Education level	.020	.007	-.069	1						
Ethnic group	.021	-.008	-.028	.053	1					
Employment status	.051*	-.020	-.074	-.111	-.072	1				
Parity	-.035	-.044	.698*	-.182	-.128	.003	1			
Marital status	.048	.057*	-.054	.021	.043	.047	-.135	1		
Family type	.037	-.024	.033	-.010	-.007	-.091	.050	-.050	1	
Religion	-.052	.009	.134	.155	.309	-.106	-.026	.163	-.031	1
Mean	35.79	35.48	26.21	1.68	2.13	1.85	3.02	1.03	1.56	1.03
SD	2.10	3.02	5.46	0.92	1.48	0.35	1.46	0.21	0.49	0.18

Key: Edu lev = Education level

Emp Sta = Employment Status

MS = Marital Status

Fam type = Family type

SD = Standard Deviation

Table 9 shows that, maternal employment ( $r = .051$ ,  $p > .05$ ) and marital status ( $r = .057$ ,  $p = .055$ ) were significantly correlated with neonatal infections in post-tests 1 and 2.

**Table 10: Regression Model Summary on Predictors of NIF (n = 800)**

Model		R	R square	Adjusted R square	Std error of the estimate	
1		.114 <sup>a</sup>	.013	.003	2.09768	
2		.081 <sup>a</sup>	.007	-.003	3.02661	
Source of Variance		Sum of	Df	Mean square	F	Sig.
		Squares				
<b>Intervention one</b>	Regression	45.529	8	5.691	1.293	.243 <sup>b</sup>
	Residual	3480.609	791	4.400		
	Total	3526.139	799			
<b>Intervention two</b>	Regression	48.020	8	6.002	.655	.731 <sup>b</sup>
	Residual	7245.829	791	9.160		
	Total	7293.849	799			
Variables		Regression weight				
		B	Std error	Standard. Coef. ( $\beta$ )	t-value	Sig.
<b>Intervention one</b>	(Constant)	35.021	.823		42.542	.000
	Age	.005	.020	.014	.274	.784
	Level of education	.068	.083	.030	.823	.411
	Ethnic group	.058	.053	.041	1.085	.278
	Employment status	.311	.216	.052	1.439	.151
	Parity	-.044	.074	-.031	-.600	.549
	Marital status	.521	.349	.054	1.492	.136
	Family type	.187	.151	.044	1.239	.216
	Religion	-.855	.450	-.074	-1.900	.058
<b>Intervention two</b>	(Constant)	35.997	1.188		30.306	.000
	Marital status	.733	.503	.053	1.456	.146

The result in Table 10 shows that, the predictor variables had very small positive correlation with neonatal infections due to hand washing during interventions one ( $R = .114$ ,  $p < .05$ ) and two ( $R = .081$ ,  $p < .05$ ). The combination of all the predictor variables (age, education level, ethnic group, employment status, parity, marital status, family type and religion) are not joint predictors of neonatal infections. Overall, the model accounts for only 3% at interventions one and two respectively of the variance in neonatal infections due to hand washing which indicates that the first and second interventions are not a significant fit for the data (3% each) as they accounted for a variance that can be explained as not a significant amount. Furthermore, the regression ANOVA revealed that the model does not significantly improved our ability to predict the outcome variable (neonatal infections prevention due to hand washing), because the F-ratio was not significant.