Knowledge and Practice about Placental Stem Cell and its Utilisation among Various Health Professionals

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Abstract

This study intended to assess the knowledge and practice about placental stem cell and its utilisation, determine the relation between the knowledge and practice score and find out the association. The study design was a descriptive survey research type. The sample consisted of 300 respondents. The sampling technique adopted was non-probability purposive sampling technique. A structured questionnaire was used to collect the information. The validity and the reliability of the tool was done and checked by the test-retest reliability method using Karl Pearson correlation co efficiency. The present study showed the outcomes of Chi-square test analysis, among the demographic variables accounted for association. The variables age in years (χ^2=10.795, df=3), gender (χ^2=6.894, df=1), professional qualification (χ^2=7.763, df=3), previous knowledge regarding placental stem cell collection (χ^2=10.795, df=3), and source of information (χ^2=10.795, df=3) were significantly associated with knowledge (p<0.05). The demographic variable work experience only was not significantly associated at p >0.05. The outcomes of the Chi-square test analysis in this study was carried out to determine the association between practice about placental stem cell and its utilisation among health professionals and the selected demographic variables. The variables age in years (χ^2=17.850, df=3), professional qualification (χ^2=15.252, df=3), previous knowledge regarding placental stem cell collection (χ^2=3.870, df=3), and source of information (χ^2=9.170, df=3) were found to be statistically significantly associated with practice (p<0.05). The demographic variable like gender and work experience were not statistically significantly associated at (p>0.05).

Key words: : Practice, Placental stem cell, Health professionals

Stem cells are unspecialised and grow as specialised cells. The zygote can give rise to a whole organism, known as totipotent SCs. Stem cell which is type in inner cell mass where it can produce to many different type of cells and are consequently known as pluripotent, can do gene transfer thereafter (Rao & Raghu, 2011). This also reduces the risk of immune rejection. PSCs can further specialised and give rise to cells with more specific functions, known as MSCs (Rao 2011). The recent advancement in stem cell therapy can advance the medical field by means of applying latent as this has a power for new cell formation, creation and segregation to various lineages by one's own body (Malhotra et al, 2019).

Research Objectives

1. To assess the knowledge about placental stem cell and its utilisation among various health professionals.
2. To assess the practice about placental stem cell and its utilisation among various health professionals.
3. To determine the relation between the knowledge and practice score regarding placental stem cell and its utilisation.
4. To find the association between knowledge and practice and demographic variables.
5. To prepare a self-instructional module on effective methods in collecting the placental stem cell.

Research Hypotheses

1. There will be significant correlation between knowledge and practice about placental stem cell and its utilisation among health professionals.

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Table 1: Demographic variables distribution of health professionals (N=300)

Sl.No.	Demographic variables	Frequency	Percentage (%)
1	Age (years)		
	21 -25	173	57.7
	26-30	53	17.7
	31-35	52	17.3
	36 and above	22	7.3
2	Gender		
	Male	51	17.0
	Female	249	83.0
3	Professional qualification		
	General nursing and midwifery	159	53.0
	Basic BSc (N)	43	14.3
	PB BSc (N)	66	22.0
	Lab assistant	32	10.7
4	Experience in working (in years)		
	1-5	186	62.0
	6- 10	87	29.0
	11- 15	27	9.0
5	Previous knowledge about placental stem cell collection		
	Yes	87	29.0
	No	213	71.0
6	If yes, source of information (n=87)		
	Family	5	5.7
	Friends	17	19.5
	Media	41	47.1
	Continuing nursing education	24	27.6

Table 2: Health professionals with knowledge regarding placental stem cell and its utilisation through frequency and percentage distribution

Sl.No.	Level of knowledge	Health professionals	
		Frequency (F)	Percentage (%)
1	Inadequate (<50%)	176	58.7
2	Moderately adequate (50-75%)	124	41.3
3	Adequate (>75%)	-	-
4	Over all	300	100

Table 3: Distribution of health professionals with practice regarding stem cell and its utilisation by frequency and percentage

Sl.No.	Practice level	Health professionals	
		Frequency (f)	Percentage (%)
1	Poor (<50%)	126	42.0
2	Average (50-75%)	174	58.0
3	Good (>75%)	-	-
4	Over all	300	100

2. There will be association between knowledge and practice with demographic variables.

Material & Methods

The research design was quantitative, descriptive survey type. The sampling technique adopted was non-probability purposive sampling technique. The sample consisted of 300 respondents. The setting selected was 4 hospitals and population was staff nurses and lab assistants working in the selected hospitals. The data was analysed by frequency and percentage distribution, and applied to calculate the variables of health professionals. The Karl Pearson correlation was applied to determine the relation connecting the knowledge and practice about the placenta stem cell and its utilisation among health professionals. Association between level of knowledge and practice about placental stem cell and its utilisation and selected demographic variables was tested by Chi-square. Unpaired t test/ANOVA F test was used for comparing of mean scores of knowledge and practice on PSC and utilisation of the health professionals over their demographic variables.

Results

Table 1 reveals that majority (n=173, 57.7%) were 21-25 years, 53 (17.7%) were 26-30 years, 52 (17.3%) were 31-35 years and minimum (n=22, 7.3%) were 36 years and above. As for gender, majority of respondents (n=249, 83%) were females and minority i.e. 51 (17 %) were males. Professional qualification: majority i.e. 159 (53%) were GNM, 66 (22%) were PB BSc Nursing, 43 (14.3%) were BSc Nursing and 32 (10.7%) were lab assistant. Work experience: 186 (62%) had 1-5 years of work experience, 87 (29%) had 6-10 years and 27 (9%) had 11-15 years. Previous knowledge about placental stem cell collection: 213 (71%) had no previous knowledge about placental stem cell collection and minority (n=87, 29%) had previous knowledge.

Source of knowledge: 41 (47.1%) got knowledge from media, 24 (27.6%) got knowledge from continuing nursing education, 17 (19.5%) got

Table 4: Correlation between knowledge and practice regarding placental stem cell and its utilisation among health professionals

Variables	Practice	
	R	p
Knowledge	0.620*	< 0.001

Table 5: Association between knowledge regarding placental stem cell and its utilisation among health professionals with age in years

Sl.No.	Demographic variables	Sample (n=300)		Level of knowledge				χ^2 value	p-value
				Inadequate (n=176)		Moderate (n=124)			
		F	%	F	%	F	%		
1	Age in years								
	21-25	173	57.7	93	52.3	80	64.5	10.795, df=3, S	p<0.05
	26-30	53	17.7	29	16.3	24	19.4		
	31-35	52	17.3	41	23.3	11	8.9		
	36 and above	22	7.3	13	7.4	9	7.3		
2	Gender								
	Male	51	20	22	12.5	28	22.6	6.894, df-1, S	p<0.05
	Female	249	83	154	17.5	96	77.4		
3	Professional qualification								
	GNM	159	53.0	85	48.3	74	89.7	7.763, df=3, S	p<0.05
	BSc Nursing	43	14.3	33	18.8	10	8.1		
	PB BSc Nursing	66	22.0	40	22.7	26	21.3		
	Lab assistant	32	10.7	18	10.2	14	11.3		
4	Work experience in years								
	1-5	186	62	106	60.2	80	64.5	0.972, df=1, NS	p>0.05
	6-10	87	29.0	52	29.5	35	28.2		
	11-15	27	9.0	18	10.2	9	7.3		
5	Previous knowledge about placental stem cell collection								
	Yes	87	29.0	41	23.3	46	37.1	6.739, df=1, S	p<0.05
	No	213	71.0	135	76.7	78	62.9		
6	If yes, source of information (n=87)								
	Family	5	5.7	2	4.9	3	6.5	7.975, df=3, S	p<0.05
	Friends	17	19.5	10	24.4	7	15.2		
	Media	41	47.1	23	56.1	18	39.1		
	Continuing education	24	27.6	6	14.6	18	39.1		

knowledge from friends and 5 (5.7%) from family.

Table 2 revealed that more than half i.e.176 (58.7%) of them had inadequate knowledge about placental stem cell and its utilisation, the rest 124 (41.3%) were average and none were having the knowledge.

More than half i.e. 174 (58.0%) of health professionals had average level of practice about placental stem cell and its utilisation, the rest i.e. 126 (42.0%) of them had poor practice and none of them had good practice (Table 3).

The knowledge and practice about placental stem cell and its utilisation was found to be highly significant (p<0.001) (Table 4). The regression analysis presented in table was also found to be significant. It may be concluded that there was relationship of knowledge and practice on placental stem cell and its utilisation among health professionals. Hence, research hypothesis was accepted and null hypothesis was rejected.

Chi-square test analysis was carried out to determine the association between knowledge regarding PSC and health professionals and demographic variables. Outcome: age in years (χ^2=10.795, df =3), gender (χ^2=6.894, df=1), (χ^2=7.763, df=3) (Table 5). Work experience (χ^2=0.972, df=1) was not significantly associated,

Table 6: Association between practice regarding placental stem cell and its utilization among health professionals with age

S.No.	Demographic variables	Sample (n=300)		Level of practice				χ^2 value	p value
				Poor (n=126)		Average (n=174)			
		F	%	F	%	F	%		
1	*Age in years*								
	21 -25	173	57.7	63	50.9	110	63.2	17.850, df=3, S	p<0.05
	26-30	53	17.7	22	17.3	31	17.835		
	31-35	52	17.3	35	27.8	17	9.8		
	36 and above	22	7.3	6	4.3	16	9.2		
2	*Gender*								
	Male	51	20.0	19	15.1	31	17.8	1.149, df-1, NS	p>0.05
	Female	249	83.0	107	84.9	143	82.2		
3	*Professional qualification*								
	GNM	159	53.0	53	42.1	106	60.8	15.252, df=3, S	p<0.05
	BSc nursing	43	14.3	27	21.4	16	9.2		
	PB BSc nursing	66	22.0	34	27.0	32	18.4		
	Lab assistant	32	10.7	12	9.5	20	18.4		
4	*Work experience*								
	1-5 years	186	62.0	75	59.5	111	63.8	0.797, df=1, NS	p>0.05
	6-10 years	87	29.0	40	31.7	47	27.0		
	11-15 years	27	9.0	11	8.7	16	9.2		
5	*Previous knowledge about placental stem cell collection*								
	Yes	87	29.0	29	23.0	58	33.3	3.870, df=1, S	p<0.05
	No	213	71.0	97	77.0	116	66.7		
6	*If yes, source of information(n=87)*								
	Family	5	5.7	0	0	5	8.6	9.170, df=3, S	p<0.05
	Friends	17	19.5	10	34.5	7	12.1		
	Media	41	47.1	14	48.3	27	46.6		
	Continuing education	24	27.6	5	17.2	19	32.8		

previous knowledge regarding placental stem cell collection (χ^2=6.739, df=1) was statistically significantly associated with knowledge; source of information (χ^2=7.975, df=3) was associated at p<0.05.

Table 6 depicts the outcomes of Chi-square test analysis, which was carried out to determine the association between practice about placental stem cell and its utilisation among health professionals and the selected demographic variables. The variable age in years (χ^2=17.850, df=3), was significantly associated, gender (χ^2=1.149, df=1) was found to be not significantly associated, professional qualification (χ^2=15.252, df=3) was significantly associated, (χ^2=0.797, df=1) was found to be NS associated, previous knowledge regarding placental stem cell collection (χ^2=3.870, df=3) was significantly associated with practice (p<0.05).

Table 7 depicts the comparison of two variables with the socio demographics, F test showed for the age was 18.454 and significant at the level of 0.001. For gender t value was 1.066 and found to be not significant. Professional qualification: ANOVA test depict as 11.324 was significant, work experience, f value was 6.789 and previous knowledge, t value was 2.684; source of knowledge, F value was 1.325 and not significant.

Table 8 revealed the practice score with the socio demographic variables. F test showed for the age was 8.254, which was significant at the level of 0.001. t-value was 0.968 in gender and found to be not significant. NOVA test depicted

Table 7: Mean and SD of knowledge regarding placental stem cell and utilisation among the health professionals over their demographic variables

S.No.	Demographic variables	Knowledge		Unpaired t-test/ F-test value (ANOVA)	p value
		Mean	SD		
1	*Age (years)*				
	21 -25	8.14	1.74	F_{ratio}=18.454, S	p<0.001
	26-30	7.83	2.24		
	31-35	5.73	2.68		
	36 and above	7.45	2.30		
2	*Gender*				
	Male	7.92	2.53	t=1.066, NS	p>0.05
	Female	7.55	2.17		
3	*Professional qualification*				
	GNM	8.22	1.72	F_{ratio}=11.324, S	p<0.001
	BSc (N)	6.26	2.72		
	PB BSc (N)	7.03	2.58		
	Lab assistant	7.69	1.97		
4	*Work experience in years*				
	1-5	7.97	1.83	F_{ratio}=6.789, S	p<0.001
	6-10	7.18	2.65		
	11-15	6.63	2.81		
5	*Previous knowledge about placental stem cell collection*				
	Yes	8.15	2.22	t=2.684, S	p<0.05
	No	7.40	2.21		
6	*If yes, source of information (n=87)*				
	Family	8.80	1.30	F_{ratio}=1.325, NS	p>0.05
	Friends	7.47	2.60		
	Media	8.08	2.25		
	Continuing nursing education	8.75	1.96		

Table 8: Mean and SD of practice regarding placental stem cell and utilisation Among the health professionals over their demographic variables

Sl.No.	Demographic variables	Practice		Unpaired t-test/ F-test value (ANOVA)	p value
		Mean	SD		
1	*Age (years)*				
	21 -25 years	12.77	2.823	F_{ratio}=8.254, S	p<0.001
	26-30 years	12.30	4.218		
	31-35 years	9.08	4.686		
	36 year and above	13.32	2.982		
2	*Gender*				
	Male	12.26	3.702	t=0.968, NS	p>0.05
	Female	12.04	3.761		
3	*Professional qualification*				
	GNM	13.07	2.691	F_{ratio}=14.048, S	p<0.001
	BSc (N)	9.81	4.558		
	PB BSc (N)	10.97	4.523		
	Lab assistant	12.56	3.491		
4	*Work experience in years*				
	1-5	8..44	3.236	F_{ratio}=13.489, S	p<0.001
	6-10	11.39	4.429		
	11-15	12.89	4.379		
5	*Previous knowledge about placental stem cell collection*				
	Yes	12.60	3.777	t=2.984, S	p<0.05
	No	11.88	3.718		
6	*If yes, source of information (n=87)*				
	Family	14.40	1.51	F_{ratio}=12.467, S	p<0.05
	Friends	10.76	4.38		
	Media	12.83	3.50		
	Continuing nursing education	13.13	3.63		

as 14.048 was significant in regards to professional qualification of the sample. In the work experience, f - value was 13.489, t-value was 2.984 and also S in aspect of previous knowledge. Source of knowledge, F value was 12.467 and significant.

Discussion

It was found that, more than half (58.7%) respondents had inadequate knowledge about placental stem cell and its utilisation, the rest (41.3%) had moderate knowledge and adequate knowledge was found in none. The above finding was supported by many studies. Similarly, a study conducted by Hippokratia (2014) showed that 15.6 percent of the participants had knowledge on the placental stem cell collection methods and its usage.

Conclusion

The idea of having training before they perform the placental stem cell collection will be helpful to perform the procedure accurately as the knowledge was lacking among the health professionals.

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