Assessment of Knowledge on Prevention and Management of Biopsychosocial Problems

¹ Paulraj S, ² Dr. M. Jeyagowri, ³ Dr. Ananda Bb

¹Principal, Goldfinch College of Nursing, Bangalore, Karnataka, ²Principal, Rani Meyyammai College of Nursing, Chidambaram, Tamilnadu, ³Associate Professor, Department of General Surgery, Dr. BR Ambedkar Medical College, Bangalore, Karnataka

Abstract: A research study entitled "A study to assess the knowledge on prevention and management of biopsychosocial problems among the software professionals at Chennai" was conducted. The objective of the study was to identify the knowledge among software professionals on prevention and management of biopsychosocial problems.

The research approach was descriptive survey and the design was descriptive correlation design. Systematic sampling technique was used for this study. Data were collected using structured knowledge questionnaire. Content validity was established and modifications was made based on the experts suggestions. Reliability was established for the research tool and was found to be reliable (r=0.85). Pilot study was conducted among 40 software professionals who fulfilled the sampling criteria the study was found to be feasible. Training module (Video teaching programme and Booklet) on prevention and management of biopsychosocial problems were administered. Data were collected using demographic and occupational proforma as well as structured knowledge questionnaire.

Descriptive and inferential statistics were used to analyze the data. The study results revealed that among the software professionals 245 (61.3%) of them were males. Totally 316 (79.0%) were aged below 35 years. It was found that half the number, totaling 271 (67.8%) sample population, was unmarried. A total of 255 (63.8%) respondents were graduates or diploma holder; 215 (53.8%) participants had an income of Rs. 30000, and 270 (67.5%) respondents were from nuclear family with regard to demographic variable. Totally 390 (97.5%) software professionals were from software programming and development. A total of 300 (75.0%) were using laptop computers. It was observed that 284 (71.0%) were designated as software engineer or application developer; 249 (62.3%) of them had work experience 5 years and less; 274 (68.5%) have worked in 2 companies and less; 344 (86.0%) of the respondents were working in general duty; 323 (80.8%) worked upto 8 hours in a day. It was observed that 306 (76.5%) of them rarely took work breaks. A total of 325 (81.3%) of them took work breaks less than 30 minutes; 241 (60.3%) spent less than 1 hour to travel to office; 268 (67.0%) participants travel less than 25 kms per day to office; and 328 (82.0%) considered their job as easy with regard to occupational variables. The mean knowledge score was found improved from 21.04 (pretest) to 36.88 (posttest II after 90 days). The significant 'p' value (p<0.001) gave the inference that the difference in knowledge existed between the pre and posttest were statistically significant.

Keywords: Assessment, Knowledge, Biopsychosocial problems, Software professionals

Date of Submission: 23-02-2018

Date of acceptance: 12-03-2018

I. Introduction

Software is one of the most opted professions among the literates in India. The high compensations coupled with the great perks and quick growth scopes have made every aspirant to opt for this sector. The software profession has its own merits, but at the same time there are a wide range of problems associated with it even at a younger age.

II. Need For The Study

Working for hours with a computer is now a new trend in life. Whether it is for work or just for fun, certain risks are involved with prolonged computer use. Any task that involves staring at a computer screen, no matter how exciting or interesting, leads to various health problems. The most common complaints are eye strain, headache, neck pain, shoulder pain, backache, upper and lower extremity pain, hypertension, obesity, constipation, thrombosis, insomnia, frustration, job stress, depression, work family conflict, work dissatisfaction, family dissatisfaction and family work conflict.

III. Statement Of The Problem

A study to assess the knowledge on prevention and management of biopsychosocial problems among the software professionals at Chennai

IV. Objectives Of The Study

- 1. To describe the demographic data of the software professionals
- 2. To assess the knowledge on prevention and management of biopsychosocial problems among the software professionals

V. Research Methodology

- **Research approach** Descriptive survey approach
- Research design Descriptive correlation design
- Research setting Software companies, Chennai
- **Population** Software professionals
- Sample and sample size 400 software professionals
- Sampling technique Systematic sampling technique
- Study instruments used Tool 1: Demographic and occupational variables

Tool 2: Questionnaire to measure the knowledge

- Intervention used Training module (Video teaching programme and Booklet) on prevention and management of biopsychosocial problems among software professionals
- **Procedure for data collection** A study was conducted on 400 software professionals in the software companies at Chennai. The tools were administered after obtaining the administrative and informed consent to assess the knowledge on prevention and management of biopsychosocial problems among the software professionals.
- Plan for data analysis Descriptive and inferential statistics with the help of SPSS version 20.0 was used for analysis of data

VI. Results

Section 1: Demographic And Occupational Data Of The Software Professionals Table 1: Frequency and percentage distribution of demographic variables N=400

S No	Demographic variables	Frequency	0/0
1	Gender	<u> </u>	•
	Men	245	61.3
	Women	155	38.7
2	Age		
	35 years and below	316	79.0
	Above 35 years	84	21.0
3	Marital status		
	Unmarried	271	67.8
	Married	129	32.2
4	Education level		
	Undergraduates/diploma holder	255	63.8
	Postgraduates	145	36.2
5	Monthly income		
	Upto Rs. 30,000	215	53.8
	More than Rs. 30,000	185	46.2
6	Type of family		
	Joint	130	32.5
	Nuclear	270	67.5

DOI: 10.9790/1959-0702015967 www.iosrjournals.org 60 | Page

Table 1 depicts the demographic data of the software professionals. Regarding gender, 245 (61.3%) were men and 155 (38.7%) were women.

Of the total 400 software professionals studied, 316 (79.0%) were aged below 35 years and 84 (21.0%) were aged above 35 years.

Regarding marital status, 271 (67.8%) were unmarried and 129 (32.2%) were married.

Regarding education level, 255 (63.8%) were undergraduates or diploma holders and 145 (36.2%) were postgraduates.

Regarding monthly income, 215 (53.8%) were drawing salaries upto Rs. 30,000 and 185 (46.2%) was drawing more than Rs. 30,000 as salary.

With regard to type of family, 270 (67.5%) were in nuclear family and 130 (32.5%) of them were in joint family.

Table 2: Frequency and percentage distribution of occupational variables

N:	=4	0	U
14.	-7	v	v

S No	Occupational variables	Frequency	%
1	Type of IT sector		
	Software programming and development	390	97.5
	Medical transcription, call center & coding employees	10	2.5
!	Type of computer used at work		
	Desktop computer	100	25.0
	Laptop computer	300	75.0
3	Designation		
	Software engineer or application developer	284	71.0
	Associate/Technical head	116	29.0
ļ	Total work experience	·	•
	Upto 5 years	249	62.3
	More than 5 years	151	37.7
;	Total number of companies worked previously	-	
	Upto 2 companies	274	68.5
	More than 2 companies	126	31.5
<u> </u>	Working in shifts	1	F
	Yes	56	14.0
	No	344	86.0
,	Work duration (in a day)	p i i	00.0
	Upto 8 hours	323	80.8
	More than 8 hours	77	19.2
}	Regularity in taking work breaks		•
	Rarely (1 to 2 times a day)	306	76.5
	Often (More than 2 times a day)	94	23.5
)	Duration of work breaks		
	30 minutes and less	325	81.3
	More than 30 minutes	75	18.7
.0	Time spent in travel		<u> </u>
	Less than 1 hour	241	60.3
	More than 1 hour	159	39.7
1	Distance travelled		
	Upto 25 kms	268	67.0
	More than 25 kms	132	33.0

12	Nature of job		
	Easy	328	82.0
	Difficult	72	18.0

Table 2 depicts the occupational data of the software professionals. Of the total 400 software professionals studied, 390 (97.5%) were from IT division (software programmers and developers) and 10 (2.5%) were from medical transcription, call center and coding employees. Regarding type of computer used, 300 (75.0%) were using laptop computer and 100 (25.0%) were using desktop computer.

With regard to designation, 284 (71.0%) were designated as software engineer or application developer and 116 (29.0%) were designated as Associate or Technical head. Of the total 400 software professionals studied, 249 (62.3%) were working in the present organization for upto 5 years and those with more than 5 years of tenure were 151 (37.7%). Of the total 400 software professionals studied, 274 (68.5%) had worked upto a maximum of two companies and 126 (31.5%) worked in more than two companies. Regarding working in shifts, 344 (86.0%) worked in general shifts and 56 (14.0%) worked in shift duty.

Regarding work duration, 323 (80.8%) of them worked for upto 8 hours in a day and 77 (19.2%) of them were working more than 8 hours in a day. Of the total 400 software professionals studied, 306 (76.5%) took breaks rarely and 94 (23.5%) of them took breaks regularly.

Regarding duration of work breaks, 325 (81.3%) took breaks less than 30 minutes and 75 (18.7%) of them took more than 30 minutes of work break. Regarding time spent on travel, 241 (60.3%) spend less than 1 hour to reach office and 159 (39.7%) of them spent more than 1 hour to reach their office. Of the total 400 software professionals studied, 268 (67.0%) travelled upto 25 kms in a day and 132 (33.0%) of them travelled more than 25 kms in a day. With regard to nature of job, 328 (82.0%) viewed their job as easy and 72 (18.0%) of them viewed it as difficult.

Section 2: Knowledge On Prevention And Management Of Biopsychosocial Problems Among The Software Professionals Before The Intervention

Table 3: Domain-wise pretest mean knowledge score on prevention and management of biopsychosocial problems among the software professionals

				N=400	
Domains	T M D H	M. C.	Pretest		
	Health Problems	Max Score	Mean	Standard deviation	Mean %
	1. Eye strain	6	2.56	1.47	42.58
	2. Upper trunk pain	4	1.94	0.98	48.56
	3. Upper extremity pain	4	1.69	1.01	42.19
S	4. Lower extremity pain	4	2.29	0.96	57.13
blen	5. Hypertension	2	1.56	0.55	77.88
l pro	6. Obesity	2	1.34	0.78	67.13
Biological problems	7. Constipation	2	0.89	0.76	44.63
Biolc	8. Thrombosis	2	1.25	0.73	62.38
	9. Sleep problem	2	1.12	0.75	56.00
gical	10. Frustration	2	1.18	0.78	59.00
Psychological problems	11. Job stress	2	1.52	0.76	76.00
Psyc	12. Depression	2	0.74	0.70	36.88
	13. Work-family conflict	1	0.77	0.42	77.25
jcal IS	14. Work satisfaction	1	0.50	0.50	50.25
Sociological problems	15. Family satisfaction	1	0.71	0.46	70.75
Soc	16. Family work conflict	1	0.50	0.50	50.25

Data, in table 3, show the domain-wise pretest mean knowledge on prevention and management of biopsychosocial problems among the software professionals. The domain-wise pretest mean knowledge in the prevention and management of biological problems like eye strain was 2.56, upper trunk pain was 1.94, upper extremity pain was 1.69, lower extremity pain was 2.29, hypertension was 1.56, obesity was 1.34, constipation was 0.89 and thrombosis was 1.25.

The domain-wise pretest mean knowledge on prevention and management of psychological problems like sleep problem was 1.12, frustration was 1.18, job stress was 1.52 and depression was 0.74.

The domain-wise pretest mean knowledge on prevention and management of sociological problems like work-family conflict was 0.77, work satisfaction was 0.50, family satisfaction was 0.71 and family work conflict was 0.50.

Table 4: Level of knowledge on prevention and management of biopsychosocial problems among the software professionals in the pretest

N=400

	Level of knowledge in the pretest							
	Poor (Upto 50%)		Moderate (51 to 75%)		Good			
Domains					(More than 75%)			
	No.	%	No.	%	No.	%		
Biological problems	167	41.8	222	55.5	11	2.7		
Psychological problems	188	47.0	147	36.8	65	16.2		
Sociological problems	239	59.8	142	35.5	19	4.7		
Overall knowledge	166	41.5	223	55.8	11	2.7		

Table 4 shows the frequency and percentage distribution of level of knowledge on prevention and management of biopsychosocial problems among the software professionals in the pretest. With regard to level of knowledge on prevention and management of biological problems 167 (41.8%) of them had poor knowledge, 222 (55.5%) of them had moderate knowledge and only 11 (2.7%) of them had good knowledge in the pretest.

With regard to level of knowledge in the prevention and management of psychological problems 188 (47.0%) had poor knowledge, 147 (36.8%) of them had moderate knowledge and only 65 (16.2%) of them had good knowledge in the pretest.

With regard to level of knowledge in the prevention and management of sociological problems 239 (59.8%) of them had poor knowledge, 142 (35.5%) of them had moderate knowledge and only 19 (4.7%) of them had good knowledge in the pretest.

Regarding overall knowledge in the prevention and management of biopsychosocial problems, 166 (41.5%) of them had poor knowledge, 223 (55.8%) of them had moderate knowledge and only 11 (2.7%) of them had good knowledge in the pretest.

Knowledge On Prevention And Management Of Biopsychosocial Problems Among The Software Professionals After The Intervention

Table 5: Domain-wise mean knowledge scores on the prevention and management of biopsychosocial problems among the software professionals in the posttest I

N=400

			KNOWLEDGE			
Domains	Health problems	Max score	Mean	Standard deviation	Mean %	
	1. Eye strain	6	5.56	0.60	92.71	
	2. Upper trunk pain	4	3.27	0.70	81.75	
	3. Upper extremity pain	4	2.32	0.96	58.00	
S	4. Lower extremity pain	4	3.33	0.58	83.25	
blem	5. Hypertension	2	1.69	0.52	84.38	
l pro	6. Obesity	2	1.57	0.63	78.63	
Biological problems	7. Constipation	2	1.67	0.47	83.63	
Biole	8. Thrombosis	2	1.85	0.36	92.50	
	9. Sleep problem	2	1.42	0.68	70.75	
gical	10. Frustration	2	1.43	0.71	71.38	
Psychological problems	11. Job stress	2	1.52	0.64	75.75	
Psyc	12. Depression	2	1.18	0.78	59.00	
pu a a	13. Work-family conflict	1	0.97	0.17	97.00	

DOI: 10.9790/1959-0702015967 www.iosrjournals.org 63 | Page

	14. Work satisfaction	1	0.18	0.78	59.00
	15. Family satisfaction	1	0.95	0.21	95.25
	16. Family work conflict	1	0.18	0.78	59.00

Data, in table 5, show the domain-wise mean knowledge on the prevention and management of biopsychosocial problems among the software professionals in the posttest I.

The domain-wise mean knowledge on the prevention and management of biological problems like eye strain was 5.56, upper trunk pain was 3.27, upper extremity pain was 2.32, lower extremity pain was 3.33, hypertension was 1.69, obesity was 1.57, constipation was 1.67 and thrombosis was 1.85 in the posttest I.

The domain-wise mean knowledge on the prevention and management of psychological problems like sleep problem was 1.42, frustration was 1.43, job stress was 1.52 and depression was 1.18 in the posttest I.

The domain-wise mean knowledge score regarding prevention and management of work-family conflict was 0.97, work satisfaction was 0.18, family satisfaction was 0.95 and family work conflict was 0.18 in the posttest I. Table 6: Level of knowledge on the prevention and management of biopsychosocial problems among the software professionals in the posttest I

N = 400

	Level of	knowledge in	the posttest I			
	Poor		Modera	te	Good	
Domains	(Upto 50%)		(51 to 75%)		(More th	an 75%)
	No.	%	No.	%	No.	%
Biological problems	42	10.5	82	20.5	276	69.0
Psychological problems	84	21.0	209	52.2	107	26.8
Sociological problems	81	20.2	204	51.0	115	28.8
Overall knowledge	12	3.0	162	40.5	226	56.5

Table 6 shows the frequency and percentage distribution of level of knowledge on the prevention and management of biopsychosocial problems among the software professionals in the posttest I. With regard to level of knowledge on the prevention and management of biological problems, 42 (10.5%) of them had poor knowledge, 82 (20.5%) of them had moderate knowledge and 276 (69.0%) of them had good knowledge in the posttest I.

With regard to level of knowledge on the prevention and management of psychological problems, 84 (21.0%) had poor knowledge, 209 (52.2%) of them had moderate knowledge and 107 (26.8%) of them had good knowledge in the posttest I.

With regard to level of knowledge on the prevention and management of sociological problems, 81 (20.2%) of them had poor knowledge, 204 (51.0%) of them had moderate knowledge and 115 (28.8%) of them had good knowledge in the posttest I.

Regarding overall knowledge on the prevention and management of biopsychosocial problems, 12 (3.0%) of them had poor knowledge, 162 (40.5%) of them had moderate knowledge and 226 (56.5%) of them had good knowledge in the posttest I.

Table 7: Domain wise mean knowledge score on the prevention and management of biopsychosocial problems among the software professionals in the posttest II

N=400

			POSTTEST II			
Domains	Health problems	Max score	Mean	Standard deviation	Mean %	
	1. Eye strain	6	5.96	0.21	99.25	
blems	2. Upper trunk pain	4	3.83	0.38	95.63	
Biological problems	3. Upper extremity pain	4	3.58	0.55	89.50	
Biologi	4. Lower extremity pain	4	3.80	0.40	95.00	

	5. Hypertension	2	1.87	0.34	93.38
	6. Obesity	2	1.92	0.27	96.13
	7. Constipation	2	1.93	0.26	96.25
	8. Thrombosis	2	1.98	0.16	98.75
	9. Sleep problem	2	1.86	0.35	92.88
gical	10. Frustration	2	1.82	0.38	91.00
holog	11. Job stress	2	1.85	0.36	92.63
Psychological problems	12. Depression	2	1.65	0.53	82.65
	13. Work-family conflict	1	1.00	0.00	100.00
gical	14. Work satisfaction	1	0.69	0.46	69.00
Sociological problems	15. Family satisfaction	1	1.00	0.00	100.00
Soc	16. Family work conflict	1	0.77	0.42	77.25

Data, in table 7, show the domain-wise mean knowledge score on the prevention and management of biopsychosocial problems among the software professionals in the posttest II.

The domain-wise mean knowledge on the prevention and management of biological problems like eye strain was 5.96, upper trunk pain was 3.83, upper extremity pain was 3.58, lower extremity pain was 3.80, hypertension was 1.87, obesity was 1.92, constipation was 1.93 and thrombosis was 1.98 in the posttest II.

The domain-wise mean knowledge on the prevention and management of psychological problems like sleep problem was 1.86, frustration was 1.82, job stress was 1.85 and depression was 1.65 in the posttest II.

The domain-wise mean knowledge on the prevention and management of sociological problems like work-family conflict was 1.00, work satisfaction was 0.69, family satisfaction was 1.00 and family work conflict was 0.77 in the posttest II.

Table 8: Level of knowledge on the prevention and management of biopsychosocial problems among the software professionals in the posttest II

						N=400		
	Level of knowledge in the posttest II							
	Poor (Upto 50%)		Moderate (51 to 75%)		Good			
Domains					(More than 75%)			
	No.	%	No.	%	No.	%		
Biological problems	0	0.0	72	18.0	328	82.0		
Psychological problems	0	0.0	80	20.0	320	80.0		
Sociological problems	0	0.0	85	21.2	315	78.8		
Overall knowledge	0	0.0	1	0.2	399	99.8		

Table 8 shows the frequency and percentage distribution of level of knowledge on the prevention and management of biopsychosocial problems among the software professionals in the posttest II. With regard to level of knowledge on the prevention and management of biological problems, 72 (18.0%) of them had moderate knowledge and 328 (82.0%) of them had good knowledge in the posttest II.

With regard to level of knowledge on the prevention and management of psychological problems, 80(20.0%) of them had moderate knowledge and 320(80.0%) of them had good knowledge in the posttest II.

With regard to level of knowledge on the prevention and management of sociological problems, 85 (21.2%) of them had moderate knowledge and 315 (78.8%) of them had good knowledge in the posttest II.

Regarding overall knowledge on the prevention and management of biopsychosocial problems, only 1 (0.2%) had moderate knowledge and 399 (99.8%) of them had good knowledge in the posttest II.

Effectiveness Of Training Module On Knowledge Regarding Prevention And Management Of Biopsychosocial Problems Among The Software Professionals

Table 9: Effectiveness of training module on level of knowledge among the software professionals on prevention and management of biopsychosocial problems

N = 400

	Pretest		Posttest I		Posttest II	
Level of knowledge	No.	%	No.	%	No.	%
Poor (Upto 50%)	166	41.5	12	3.0	0	0.0
Moderate (51 to 75%)	223	55.8	162	40.5	1	0.2
Good (76 to 100%)	11	2.7	226	56.5	399	99.8

Table 9 shows the effectiveness of training module on the level of knowledge among the software professionals in the prevention and management of biopsychosocial problems. Among the 400 participants, in the pretest, 166 (41.5%) software professionals had poor, 223 (55.8%) had moderate and only 11 (2.7%) of them had good knowledge in the prevention and management of biopsychosocial problems. In the posttest I, only 12 (3.0%) had poor, 162 (40.5%) had moderate and 226 (56.5%) had good knowledge. In the posttest II, none (0.0%) of them had poor knowledge, only one (0.2%) had moderate and 399 (99.8%) had good knowledge on prevention and management of biopsychosocial problems.

Table 10: Mean and standard deviation of knowledge among the software professionals regarding the prevention and management of biopsychosocial problems

N = 400

Assessment	Mean	SD	Mean difference	Paired t-test	'p' value
Pretest	21.0450	7.03432		40.600	0.001*
Posttest I	30.5600	4.69110	9.515		S
Pretest	21.0450	7.03432		49.280	0.001*
Posttest II	36.8800	1.27855	15.835		S
Posttest I	30.5600	4.69110	(220	22.275	0.001*
Posttest II	36.8800	1.27855	6.320	33.375	S

Table 10 shows the mean and standard deviation of knowledge score among the software professionals before and after the intervention. The pretest means score was 21.04 with the standard deviation of 7.03. In the posttest I, the mean score was 30.56 with the standard deviation of 4.69 and the mean difference between pre and posttest I was 9.51. In the posttest II, the mean score was 36.88 with the standard deviation of 1.27 and the mean difference between pre and posttest II was 15.83. The mean difference between the posttest I and posttest II was 6.32. According to the data given the mean knowledge score was improved from 21.04 (pretest) to 36.88 (posttest II after 90 days). In the paired 't' test the 'p' value was calculated to find out whether the improvement seen in knowledge score was statistically significant. The significant 'p' value (p<0.001) gave the inference that the difference in knowledge existed between pre and posttest I and II were statistically significant.

Table 11: Repeated Measures of ANOVA on knowledge among the software professionals in the prevention and management of biopsychosocial problems

N = 400

1-400						Post hoc pair wise comparison of Bonferroni method			
	ıt					Pre Vs Post 1	Pre Vs Post 2	Post 1 Vs Post 2	
Domain	Assessment	Mean	SD	F-value	'p'-value	Mean difference (p-value)	Mean difference (p-value)	Mean difference (p-value)	
	Pre test	21.05	7.03						
	Post test I	30.56	4.69			9.515 (p<0.001)	15.835 (p<0.001)	6.320 (p<0.001)	
Knowledge	Post test II	36.88	1.28	1964.71	P<0.001				

Table 11 shows the comparison of the mean and standard deviation of the pre and posttest knowledge on the prevention and management of biopsychosocial problems in three assessments, namely pretest, posttest I and posttest II. The pretest knowledge mean score 21.05 was found increased to 30.56 in the posttest I. Further, the mean score was increased to 36.88 in the posttest II. The comparisons between the pretest and posttest I, pretest and posttest I and posttest II and posttest II, clearly indicated the increase in the knowledge had occurred in the posttest I itself which was statistically significant. The knowledge had further increased in the posttest II, which also was statistically significant (p<0.001). The comparisons were considered to know the knowledge difference which had occurred between the three assessments among the software professionals. The mean of knowledge differed at different time point was statistically significant (F=1964.71, p<0.001). Hence, it can be interpreted that all these mean differences were found by true difference and not by chance. On the whole, 90 days after the intervention the software professionals showed good improvement in their knowledge on the prevention and management of biopsychosocial problems.

VII. Conclusion

The study ends with a conclusion that the training module in the prevention and management of biopsychosocial problems was found to be effective in improving the knowledge among the software professionals.

References

- $[1] World\ health\ organization.\ Retrieved\ from\ http://www.worldhealthorganization.com.$
- [2] Sami, Lalitha, K. & Rabia. (2014). Impact of electronic services on users: a study. University of Florence, 1(2), 1-3.
- [3] Rajesh, K., Roshan, L., Yashu, B. & Saran, K.S. (2013). Technostress in relation to job satisfaction and organizational commitment among IT professionals. *International journal of scientific and research publications*, 3(12), 1-3.
- [4] Better health channel. Retrieved from http://www.betterhealthchannel.com.
- [5] Microhealth. Retrieved from https://microhealthllc.com

Paulraj S "Assessment of Knowledge on Prevention and Management of Biopsychosocial Problems"." IOSR Journal of Nursing and Health Science (IOSR-JNHS), vol. 7, no.2, 2018, pp. 59-67