

Nursing Intervention for Changing the Lifestyle of Chronic Hepatitis C

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Abstract: Hepatitis C virus (HCV) infection continues to be an important global health problem, and is one of the main causes of chronic liver disease worldwide. The clients with hepatitis C infection need to change their lifestyle, adopting healthy behaviors.

Aim: evaluate the effect of nursing intervention for changing the lifestyle of the clients with chronic hepatitis C,

Design: Quasi- experimental design was used.

Setting: The study was conducted in El-Nasser outpatient hospital clinic, this hospital related to Health Insurance hospital; which clients come to follow up and under treatment at list one year.

Sampling: Purposeful sample was composed of 90 clients with hepatitis c were selected from 955 clients in last year in outpatients follow up clinic of El-Nasser hospital.

Tools: two constructed interviewing questionnaires that were divided into: three parts about socio-demographic characteristics data, present medical history and client's knowledge about lifestyle. Another tool was medical record to collect data about normal and abnormal range of blood investigation.

Results: a significantly higher proportion of life styles control from pre to post intervention in all lifestyle items as sleep control, exercise control, pharmacy control, diet control, and excretion. In additional to, the relation between the total level of blood investigation and total level of life style change among hepatitis C clients at pre and post nursing intervention .

Conclusion : it can be concluded that the implementation of the nursing intervention for clients with chronic hepatitis c towards life style change had led to improve clients' knowledge regarding life style; also, the dietary habits, blood investigation, sleep pattern and exercise.

Recommendation: action plan to educate clients and those individuals newly diagnosed with Hepatitis C about the complexities associated with this disease. Successful introduction of lifestyle nursing interventions changes into clinical practice requires facilitation and support from all staff within the liver outpatient clinic. It includes the following items personal hygiene, dietary behavior, sleeping pattern, exercise and excretion.

Keywords: Hepatitis C virus, lifestyle, nursing intervention.

I. Introduction

Hepatitis C virus (HCV) infection continues to be an important global health problem, and is one of the main causes of chronic liver disease worldwide. The long-term impact of Hepatitis C Virus infection is highly variable in Egypt, from minimal changes to extensive fibrosis and cirrhosis with or without hepatocellular carcinoma (Mutimer, et al., 2014). The World Health Organization (WHO) estimates that about 3% of the world's population has been infected with HCV, but most of them are unaware of their infection and more than 170 million chronic carriers who are at risk of developing liver cirrhosis and/or liver cancer (Dhawan, et al., 2014).

Every year, millions of people throughout the world become infected with viruses that cause acute and chronic hepatitis; the associated burden of ill health has become a major public health concern in all countries. Equally serious is the potential risk to nurses, midwives and other healthcare providers of becoming exposed and infected during direct care activities. These diseases are therefore important issues for public health measures aimed at prevention, early diagnosis and treatment (Gore, 2012). In the Eastern Mediterranean Region, it is estimated that approximately million people are infected with 8 people are infected with HCV annually, and is consider one of the five important infections that causes premature death in the world. Annually, at least one million people die due to hepatitis in the world (WHO, 2012).

The clients with hepatitis C infection need to change their lifestyle, adopting healthy behaviors. Lifestyle modifications are strongly recommended for patients with hepatitis C virus (HCV) (Nobili, et al., 2011). Despite Egypt's status as the country with the highest levels of HCV infection in the world, most studies

have been done on diagnosis, management, and treatment of Hepatitis C (Marc, et al., 2009); and little or no studies have been done on modifying people's behavior, thus may help reduce the burden of disease in Egypt. For these reasons, the aim of this study was to evaluate the effect of designed nursing intervention for changing the lifestyle of the clients with chronic hepatitis C.

1.1 Significant of the study:

Hepatitis C is, and will remain major health problems in Egypt and the entire continent of Africa. Both infections can lead to an acute or silent course of liver disease, Egypt has the highest rate of new hepatitis C (HCV) infections ever recorded in the world, with more than half a million new cases occurring each year. According to the study, It is estimated that approximately 5-7 million Egyptians carry antibodies for HCV (Iok, 2012). Though not all persons infected with HCV proceed to develop cirrhosis of the liver or other life-threatening sequellae, the medical and economic burden incurred by those who do is significant. Liver disease is a top cause of mortality in Egypt (Dalglish, 2008).

Lifestyle interventions can play a key role in maintenance of overall health of clients with chronic liver disease. Recently published studies have advanced understanding of how various lifestyle interventions may improve the pathology and symptoms related to specific liver diseases, thereby improving quality of life for these clients (Nobili, et al., 2011)

Nurses play an important role in clients' education. They explain hepatitis to infected clients, tell them how the disease usually progresses and advise them on when to contact a doctor. Nurse should have acquired adequate information and insights to care effectively and safely for clients with viral hepatitis. The primary care nurse may undertake tasks such as specific diagnosis and initial assessment of the severity of disease, counseling the clients about the current understanding of the disease process and potential complications, as well as general issues of diet, mental health, and recommendations about health-promoting lifestyle (Morgan, 2012).

II. Aim of the study

The present study aimed to evaluate the effect of nursing intervention for changing the lifestyle of the clients with chronic hepatitis C, through :

- a) Assessing the life style of clients with chronic hepatitis c to detect their needs?
- b) Designing and implementing nursing intervention according to their needs?
- c) Evaluating the nursing intervention for changing the life style?

Research hypotheses

Is there improvement of life style for client with chronic hepatitis after nursing intervention?

III. Materials and Methods

3.1 Research Design: Quasi- experimental design was used in this study.

3.2 Setting: The study was conducted in El-Nasser outpatient hospital clinic, this hospital related to Health Insurance hospital; which clients come to follow up and under treatment at list one year.

3.3 Sampling: Purposeful sample was composed of 90 clients with hepatitis c were selected from 955 clients attending last year in outpatients follow up clinic of El-Nasser hospital.

The clients were chosen according to the following criteria:

1. Client under medical treatment at age 30-60 years old
2. Had no other chronic disease rather than hepatitis C.

3.4 Data Collection Tools: The data collection instruments were developed by the researchers after reviewing the literature related to life style for chronic hepatitis. It included two constructed interviewing questionnaires that were divided into:

Part one: Socio- demographic characteristics data such as: age, sex, marital status, occupation , level of education and income----etc.

Part two: Present medical history consisting of questions related to duration of disease, etiology and severity of the disease, kind of medication that they were taking .

Part three: Assess clients knowledge, practice and habits about lifestyle related to hepatitis c such as: personal hygiene for taking warm shower, sleep pattern as number of sleep hours and nap, practicing exercises daily and time of practicing in the morning or evening, dietary behavior as taking (eat rich with fibers and taking vegetables and fruits, food with low fat beside amount of water per daily), excretion habits if regular or need enema and pharmacy compliance...etc.

This part contains 27 questions, the questions coded as following:

No = 1: if the client reported no action or wrong habit.

Yes = 2: if the client reported doing the action right. Also, Total level of lifestyle change coded as average and good.

II) The second tool: A medical record to collect data about normal and abnormal range of blood investigation such as: platelets, RBCs, WBCs, albumen, SGOT, SGPT, Blurubine, Na, K and Ca.

This part contains 10 questions, the questions coded as following:

Abnormal = 1 & Normal= 2 as reported in medical record investigation.

3.5. Reliability of the tools: Reliability test was applied by the researchers for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar conditions on one or more occasions, Answers from repeated testing were compared (test-re-test reliability = 0.84%). Cronbach's Alpha reliability= 0.84

3.6. Validity of the tools: The tools tested by five expert's in community health nursing and some modification were done according to expertise opinion. The content and face validity of the study tools were measured to evaluate the individual items as well as the entire tools used for the study as being relevant and appropriate to test what they wanted to measure.

3.7. Pilot Study: A pilot study was conducted on 10 clients, to evaluate the content of the tools, as well as to estimate the time need for data collection, and clarity of the tools, the necessary modifications were done, namely rephrasing, utilizing simpler semantic for the statements, and added some questions, those clients were excluded from the sample.

3.8. Administrative and ethical consideration: An official permission was obtained by submission of an official letter from the faculty of nursing to the responsible authorities of the study setting to obtain the authorization for data collection. Before the interview, an orientation about the objectives of the study was carried out, followed by verbal consent taken from every one. Confidentiality was maintained all through the study.

3.9. Data collection procedure: After identifying the clients who fulfill the criteria of the study, the researchers invited them to participate in the study, the purpose of study was explained briefly to the clients who willing to participate. The clients were interviewed separately to fill out the demographic data and pre-test questionnaire.

The duration of data collection for the assessment part of study was about one month, and the time spent with each client to answer the study tools ranged from 25 to 30 minutes.

3.10. The nursing intervention program contained four phases:

- **1st phase: Assessment phase:** in this phase of the program, assessed knowledge and life style habits through collection and analysis of baseline data from the filled tools. In this phase the researchers did the pre test.

- **2nd phase: Planning phase:** The researchers identified the important needs for target group, set priorities of needs, objectives were developed.

Objective of the program: Improve the client with chronic hepatitis c knowledge, practice and habits for life style changing. The session covered their important content of personal hygiene, dietary habits, exercise, sleep pattern, excretion and pharmacy compliance.

The researchers phoned clients every two weeks and checked them for their compliance for the educations and reinforced them for change the healthy pattern of life style.

- **3rd phase: Implementation phase:** In this phase the researchers implemented the intervention to life style change for client with hepatitis c.

The researchers set schedule of appointments to meet the clients on a certain time each week after divided them into 7 subgroups with regard to their levels of education and their free time and each group ranged from 12-13 clients, each group attended 6 sessions, one session per week, Each session lasted for 45 minutes and one of the close client relative was attended in session. Posters and handouts were used as training aids in each session based on the client's educational level. Educational booklet was given to all clients. The duration of this part of study lasted for about 6-7 weeks

- **4th phase: Evaluation phase:** In order to evaluate the effect of the intervention, the post test was administrated after 3 month from the intervention using the same questionnaires, to determine the degree of retention span of information and assess what the changes happen in clients' lifestyle. This study was done within a period from February 2014 to July 2014.

3.11. Statistical Design: Data were analyzed using the statistical package for social sciences (SPSS) version 16. Qualitative data was presented as number and percent. Comparison between groups was done by Chi-square test. $P < 0.05$ was considered to be statistically significant of results.

IV. Results

Table (1) presents the distribution of the studied sample by some socio-demographic characteristics. A total of 90 were interviewed. Males constituted 77.8% of the interviewees, 87.8 % of sample were working, the mean age of them was 48.2, 54.4% had higher education, 85.5% their disease duration about less than 10 years.

According to research hypnosis for is there improvement of life style for client with chronic hepatitis after nursing intervention Table (2), Table (3), Table (4), Table (5):

Table (2) clarifies the life style items control before and after nursing intervention, A significantly higher proportion of life styles control from pre to post intervention in all lifestyle items as sleep control (0.22 ± 2.3 to 4.1 ± 0.5), exercise control (from 0.92 ± 1.8 to 7.0 ± 0.4), pharmacy control (0.92 ± 1.9 to 3.2 ± 0.6), diet control (2.2 ± 1.1 to 7.5 ± 0.3), excretion (0.40 ± 2.1 to 6.2 ± 0.5), with highly statistically significant in all items between before and after program ($P=0.001$).

Also, this table shows that a statistically significant difference was found in the mean of total life styles items between pre and post nursing intervention (38 ± 4.7 , 57.3 ± 6.8 , respectively) (T test= 21.4).

Table (3) It was evident from the table that the clients with average level of life style change before nursing intervention related to hepatitis c present among clients in their group more than 50 years was 43.02%, male was 79.7% , married was 96.51%, working was 89.53% , higher education was 53.49% and duration of disease from 5-10 years had 45.35%

Also, the table reveals that statistically significance with studied subjects' total lifestyle change for hepatitis c at preprogram and all their socio-economic characteristics ($P=0.05$ & $P=0.001$).

Table (4) shows the relation between level of lifestyle change for hepatitis c clients after intervention & their socio-economic characteristics, the majority of studied sample come from age group 41years to less than 50 years was 40.74 % , male was 80.25%, married was 97.53%, high education was 91.36% and working was 59.26%, In additional to , got enough income was 41.98 % , and the clients with disease duration from 1year to less than 10 years was 85.89 % had good level of lifestyle change related to hepatitis.

The results also indicate that statistically significant relation was detected between clients' good level of life style and all their socio-economic ($P=0.01$).

Table (5) clarifies the relation between the clients level of their investigation at pre and post nursing intervention, which was 0.0% of clients has normal Platelets before intervention improved to 56.7% after intervention, RBCs from 93.3% to 97.8%, WBCs from 30% to 76.7%, Albumen from 0.0% to 58.9%, SGPT from 0.0% to 61.1%, SGOT from 80% to 94.4% , Bilirubin from 86.7% to 92.2% , Na from 0.0% to 76.7%, K from 6.7% to 62.2%, and Ca from 43.3% to 74.4%.

Also, this tables reveals that there are highly statistically significant between total investigation at pre nursing intervention which 27.8% was normal changed to 75.6% after nursing intervention ($P=<0.001$)

Table (6) shows the relation between the total level of blood investigation and total level of life style change among hepatitis C clients at pre and post nursing intervention, it clarifies that about 65 of clients with abnormal range of total blood investigation had average level of life style change before intervention, while, the majority of them with normal range of blood investigation had good level of life style change after nursing intervention was 68, with statistically significant between pre and post nursing intervention ($r=0.96$).

V. Discussion

Lifestyle intervention is clearly an important component of the management of clients with chronic hepatitis C that intervention focuses on the provision of advice and information, which has effect on improving sustainable behavior change. Lifestyle intervention should be viewed as a process involving both practitioner and client that focuses on diet and exercise, sleeping education, the use of medication with self-monitoring and regular follow-up (**Johnson, et al., 2009**).

The results show the considerable effect of Chronic Hepatitis C diagnosis on clients' lifestyle. They emphasize the need for improving life style for clients in order to avoid unnecessary life changes. Findings revealed that nursing intervention was effective on all items of life style change after 3 months for chronic hepatitis C clients, because it included the most important aspects of healthy life for clients as personal hygiene,

sleeping pattern, dietary behavior, exercise, excretion and medication management, besides receiving knowledge and information about disease to keep their good life style. This result supported by a study indicating the beneficial effects of training programs on the health clients with liver disease (**Sharif, et al., 2005**).

Concerning the sleeping pattern, the results of this study found that sleeping is change after nursing intervention from $X \pm SD$ (0.22 ± 2.3 to 4.1 ± 0.5). On the same line, **Carlson, et al., (2010)** stated that it is important to increase knowledge about sleeping disturbance in clients with chronic hepatitis C, appropriate treatments can be developed that may improve client care outcomes and quality of life.

As regard to dietary behavior, the results of the study showed that the clients' dietary behavior is improved from pre to post nursing intervention (2.2 ± 1.1 to 7.5 ± 0.3). Changes in food intake are very important for clients with chronic hepatitis C to improve some symptoms such as nausea, fatigue, depression and appetite. On same line, **George et al. (2009)** who studied "Effects of a lifestyle intervention in patients with abnormal liver enzymes and metabolic risk factors", they found that the impact of a behavior change-based lifestyle intervention on nutritional behaviors, after three months, lead to improving on dietary intakes.

In relation to exercise, the findings of this study found the nursing intervention is more effective in clients' physical activity (0.40 ± 2.1 to 6.2 ± 0.5). Similarly, a study done by **Rusu, et al., (2013)** who reported that before the start of the study all patients were sedentary, not involved in any form of regular exercise. The degree of physical activity increased after program with statistically significant. Additionally, **Groessler, et al., 2011**) found that self-management interventions have been shown to improve the patients' self-efficacy, vitality and physical functioning. These results supported by **Surjadi et al., (2011)** who studied "Formal patient education improves patient knowledge of hepatitis C in vulnerable populations".

Regarding to pharmacy compliance, the finding revealed that there are improved in pharmacy compliance after nursing intervention $X+SD=(0.92 \pm 1.9$ to $3.2 \pm 0.6)$, the assistance of nurses in a client's education, in complication prevention, side effect management, therapy administration and in self-care is crucial to maximizing client compliance and therapy outcome. Lifestyle changes should be an important adjuvant to medical therapies for clients with hepatitis C virus infection. Consistently, **Nobili, et al., (2011)** who studied "The role of lifestyle changes in the management of chronic liver disease on patients with chronic liver disease". They mentioned the change of lifestyle may reduce the number of drug prescriptions, the progressive increase in "optimal" drug dosage, and costs associated with pharmaceutical disease management.

As regards to medical record for laboratory investigation, the findings of this study revealed that there are highly statistically significant between total blood investigation of clients at pre nursing intervention which one quarter of clients was normal changed to three quarter of clients after nursing intervention. Another recent study has also shown the positive health effects of practical lifestyle intervention based on behavior-change after three months on liver enzymes, and liver test profiles of these patients (**George et al. (2009)**). Consistently, **Rusu, et al., (2013)** who studied "Effects of lifestyle changes including specific dietary intervention and physical activity in the management of patients with chronic hepatitis C". They reported that intervention program had significant improvements on liver function testes, but Albumin and bilirubin levels were not significantly changed

The results clarified that about three quarters of clients with abnormal range of total blood investigation had average level of life style change before nursing intervention, while, the majority of them with normal blood investigation had good level of life style change after nursing intervention, with statistically significant between pre and Post nursing intervention. This result is agreed with **George et al. (2009)** who stated lifestyle interventions targeting improvement in physical activity and nutritional behaviors are a practical and effective method for improving the liver enzymes. Similarly, **Nobili, et al., (2011)** found that the patients with chronic hepatitis C had improvement in liver enzymes after lifestyle modification.

VI. Conclusion

According to results and research hypothesis this study revealed that nursing intervention had an improving effect on life style change of clients with chronic hepatitis C, including personal hygiene, healthy eating, exercise, medical therapy and sleeping pattern and excretion, have been shown statistically significant improving after nursing intervention program. Also, blood investigation improved and had statistical significant with lifestyle changes for clients with chronic hepatitis c.

Recommendation

Based on the findings of the study, the following recommendations are proposed:

- 1- Action plan to educate clients and those individuals newly diagnosed with Hepatitis C about the complexities associated with this disease.

2- Successful introduction of lifestyle nursing interventions changes into clinical practice requires facilitation and support from all staff within the liver outpatient clinic. It includes the following items personal hygiene, dietary habits, sleeping pattern, exercise and excretion.

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Table (1): Distribution of Client According to their Socio-demographic characteristics

Variable	No	%
Age / years:		
31 -	17	18.9
41 -	36	40.0
51-60	37	41.1
X ± SD	48.2±7.5	
Sex:		
Male	70	77.8
Female	20	22.2
Marital status:		
Single	4	4.4
Married	86	95.6
Occupation:		
Working	79	87.8
Non working	11	12.2
Education:		
High education	49	54.4
Average education	26	28.9
Illiterate	15	16.7
Income		

Enough	35	38.9
Average	25	27.8
Low	30	33.3
Duration of disease:		
1-5	37	41.1
5-10	40	44.4
≥10	13	14.4

Table (2): Distribution of client according to their Life style items before and after intervention and its total

Life style items	Before		After		T test	P-value
	X ± SD		X ± SD			
Sleep pattern (0-5)	0.22 ± 2.3		4.1 ± 0.5		15.6	0.001
Exercise (0-8)	0.92 ± 1.8		7.0 ± 0.4		30.5	0.001
Pharmacy compliance (0-5)	0.92 ± 1.9		3.2 ± 0.6		11.5	0.001
dietary behavior (0-9)	2.2 ± 1.1		7.5 ± 0.3		44.2	0.001
Excretion (0-8)	0.40 ± 2.1		6.2 ± 0.5		25.2	0.001
Total lifestyle	Before		After		T Test	
	%	No	%	No		
Average (35 -)	9	10.0	86	95.6		
Good (49-70)	81	90.0	4	4.4		
X ± SD	57.3 ± 6.8		38 ± 4.7		21.4**	

Table (3): Relationship between level of lifestyle of study sample pre intervention and their demographic data

Socio-demographic characteristics	Level of life style				Total No 90		r Test	P
	Average N=86		Good n=4		No	%		
	No	%	No	%				
Age / years:								
31 -	15	17.44	2	50.00	17	18.89	0.64	.001
41 -	34	39.54	2	50.00	36	40.00		
51-60	37	43.02	0	0.00	37	41.11		
Sex:								
Male	68	79.07	2	50.00	70	77.78	0.86	.001
Female	18	20.93	2	50.00	20	22.22		
Marital status:								
Single	3	3.49	1	25.00	4	4.44	0.93	.05
Marred	83	96.51	3	75.00	86	95.56		
Occupation:								
Working	77	89.53	2	50.00	79	87.78	-0.72	.001
Not work	9	10.47	2	50.00	11	12.22		
Education:								
High ed.	46	53.49	3	75.00	49	54.44	0.94	.001
Average ed.	25	29.07	1	25.00	26	28.89		
Illiterate	15	17.44	0	0.00	15	16.67		
Income								
Enough	33	38.37	2	50.00	35	38.89	0.66	.001
Average	23	26.75	2	50.00	25	27.78		
Low	30	34.88	0	0.00	30	33.33		
Duration of disease:								
1-5	34	39.53	3	75.00	37	41.11	0.91	.001
5-10	39	45.35	1	25.00	40	44.44		
≥10	13	15.12	0	0.00	13	14.45		

Table (4): Relationship between Life style of study sample post-intervention and their demographic data

Socio-demographic characteristics	Level of life style				Total N=90		r Test	P
	Average N=9		Good N=81		No	%		
	No	%	No	%				
Age / years:								
31 -	0	0.00	17	20.99	17	18.89	0.87	.001
41 -	3	33.33	33	40.74	36	40.00		
51-60	6	66.67	31	38.27	37	41.11		
Sex:								
Male	5	55.56	65	80.25	70	77.78	0.69	.001
Female	4	44.44	16	19.75	20	22.22		
Marital status:								
Single	2	22.22	2	2.47	4	4.44	0.85	.001
Marred	7	77.78	79	97.53	86	95.56		
Occupation:								
Working	5	55.56	74	91.36	79	87.78	0.84	.001
Not work	4	44.44	7	8.64	11	12.22		
Education:								
High ed.	1	11.11	48	59.26	49	54.44	0.90	.001
Average ed.	2	22.22	24	29.63	26	28.89		
Illiterate	6	66.67	9	11.11	15	16.67		
Income								
Enough	1	11.11	34	41.98	35	38.89	0.82	.001
Average	2	22.22	23	28.39	25	27.78		
Low	6	66.67	24	29.63	30	33.33		
Duration of disease:								
1-5	2	22.22	35	43.21	37	41.11	0.67	.001
5-10	3	33.33	37	45.68	40	44.45		
≥10	4	44.45	9	11.11	13	14.44		

Table (5): Distribution of Client according to their Investigation before and after Intervention

ITEM	Before		After		X2	P
	NO	%	NO	%		
1-Platelets:						
-Normal (150,- 450,)	0	0.0	51	56.7	71.2	<0.001
-Abnormal	90	100.0	39	43.3		
2-RBCs						
-Normal (450 - 650)	84	93.3	88	97.8	2.1	> 0.05
-Abnormal	6	6.7	2	2.2		
3- WBCs:						
-Normal (500 - 700)	27	30.0	69	76.7	39.4	<0.001
-Abnormal	63	70.0	21	23.3		
4- Albumen:						
-Normal (7.7 – 9.1)	0	0.0	53	58.9	75.1	<0.001
-Abnormal	90	100.0	37	41.1		
5-SGPT:						
-Normal (8- 48)	0	0.0	55	61.1	79.2	<0.001
-Abnormal	90	100.0	35	38.9		
6-SGOT						
-Normal (46-53)	72	80.0	85	94.4	8.4	< 0.05
-Abnormal	18	20.0	5	5.6		
7-Blurubine:						
-Normal (< 170)	78	86.7	83	92.2	1.5	> 0.05
-Abnormal	12	13.3	7	7.8		
8-Na :						
-Normal (135- 145)	0	0.0	69	76.7	111.9	<0.001
-Abnormal	90	100.0	21	23.3		
9- K :						
-Normal (3.5 – 5.4)	6	6.7	56	62.2	61.6	<0.001
-Abnormal	84	93.3	34	37.8		
10- Ca :						
Normal (1.7-3.9)	39	43.3	67	74.4	18.0	<0.001
Abnormal	51	56.7	23	25.6		
Total						
-Normal	25	27.8	68	75.6	41.1	<0.001
-Abnormal	65	72.2	22	24.4		

Table (6): Distribution of Client according to their Total Level of Investigation
With their Total Life Style Before and After Program

Total Level of Investigation	Level of life style/ Before		Total No	r Test	Level of life style/ After		Total No	r Test
	Average n=86	Good N=4			Average n=9	Good n= 81		
After program:					Before program:			
-Normal	22	3	25	0.92*	2	66	68	0.96*
-Abnormal	64	1	65	*	7	15	22	*