EFFECT OF LIFE STYLE MODERNIZATION UPON HEALTH PATTERN AMONG THE POPULATION OF SHALATEIN, ABU-RAMAD, AND HALAIB TRIANGLE

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ABSTRACT

Aspects of environmental indoor, health, emotional and psychosomatic status of (329) persons from (24000) persons living in the triangle area (towns of Shalatein, Abu-Ramad and Halaib) were studied. Two distinct communities are present in this area: a non-modernized community (without modern essential healthy and environmental facilities) and a modernized community (receiving the modern houses and enjoys a relatively modern way of living).

The study indicated that there is a significant increase in CMV (cytomegalovirus) antibodies detection concerning modernized community, While there was a significant increase in paratyphoid A antibodies detection concerning non-modernized community. No antibodies of HVC (hepatitis C virus) or brucellosis were detected in both communities.

The study reflects the effect of environmental modernization upon emotional and psychological status that is obvious through the significant differences in Cornell index (increase in the non-modernized community score) and quality of life (increase in the modernized community score) between both communities.

INTRODUCTION

The process of modernization is both inevitable and, on the whole, a good thing. Modernization is very highly probable because modernized societies are more powerful than 'traditional' societies, and it is preferable to the alternatives because modernizing societies are better and more hopeful places to live for most of the population, most of the time. The combination of necessity and desirability constitutes the modernization imperative (Bruce and Peter, 2003).

Of the examples of remote and sparsely areas of Egypt are the towns of Shalatein, Abu-Ramad and Halaib. These towns are present in the southeast corner of Egypt nearby the coast of the Red Sea. About 24000 persons are living at this area and distributed as following: 12250 persons (2450 families) in Shalatein, 9500 persons (1950 families) in Abu-Ramad and 2250 persons (450 families) in Halaib, according to unpublished data prepared by Red Sea Governorate Local Authority.

Since the year 1996, Egyptian government paid good attention to this community and started a strong civilization strategy in the form of building houses, schools, installation of electrical power stations, regular clean water supply, station of T.V. and radio broadcasting and other infra structures.

As a result of this governmental strategy, two distinct communities at the triangle region of Shalatein, Abu-Ramad, and Halaib are developed:

A-non-modernized community without modern essential healthy and environmental facilities (group A). B-Modernized community received the modern houses and enjoys a relatively modern way of living (group B).

This study aimed to evaluate the role that can be played by supplying a better way of living upon quality of life and its reflection on health status of the community involved.

SUBJECTS AND METHODS

The assessment included clinical, laboratory and psychological parameters. It should be noticed that some adult persons refused to share neither in the clinical nor in the laboratory assessments and accepted only to answer the questionaire of psychological assessment. Moreover, some persons were not aware of the concept of importante of the questionaire or did not understand it. Thus, persons in this study, according to their sharing, can be divided into:

Group A	Group B	Assessment
43	41	Clinical/laboratory
61	79	Clinical/laboratory/psychological
49	56	Psychological
153	176	Total
329		

The assessment include:

I-Evaluation of indoor environment status (home facilities and hygienic measurements).

Π-Medical profile includes:

1-Clinical examination: to detect any apparent diseases, congenital anomalies and examine different systems like: eye (jaundice, congestion, inflammation), heart (abnormal sounds, murmurs), chest (respiratory

sounds, wheezes, crepitations), abdomen (tenderness, enlarged organs), skeleton (abnormalities, fracture, movements), skin (inflammations, dermatitis) and neurological systems (sensation, tone).

2-Laboratory investigations:

-Urine and stool analysis: to detect pus cells , urinary crystals and parasitic infections.

-Blood indices to detect anemia.

-Detection of antibodies against the following diseases:- hepatitis C as one of blood born diseases, cytomegalovirus (CMV) as one of the viruses that causes congenital anomalies, typhoid fever as one of food born diseases and brucellosis as one of zoonotic diseases.

III-Psychosocial assessment:

1-Quality of life and health awareness by selection of 24 questions from Elito's list (1994) (which was modified and translated to Arabic by professor Ali asker (2000)*[1].

2-Emotional and psychosomatic status (Cornell index) was evaluated by selection of 135 questions from the modified Cornell index (which was modified and translated to Arabic by Mahmoud Abu-Elniel (2001)*[2].

RESULTS

I- Evaluation of indoor environment status

All the houses of non-modernized community called the ' Khesha or Borsh' are made from branches of trees covered with leaves of palms and internally decorated with sheep wool and goat hair . Each house looks like a

hat, which has lower entrance and has a 9 m^2 room. The furniture of the 'khesha' is very simple, consisting of a mat or a carpet for sleeping and a wooden box for clothes without any chairs or tables. There is no kitchen or modern appliances, only there is few numbers of aluminum and plastics vessels for preparing food and coffee. The burning of wood was used as a source of fuel. No bathroom, the processes of washing, urination or defecation are done outdoors away from the 'khesha'.

Yet, there is no electrical supply, so no media. There is no supply of regular pure water supply. The water is brought by cars or collected from rains and preserved in plastic tanks. The garbage is burned.

On the other hand, the population of modernized community lives in two types of houses: a- Wooden buildings built from granular wood. Each one 30 m^2 area is relatively large and consists of two rooms and a yard in the middle with a small area for cooking and a separate bathroom outside the house. b- One floor governmental buildings were built with cement. Each one has an inner yard, two bed rooms, a hall, a bathroom and a kitchen equipped with a water storage tank. In both types of houses, there is regular pure water supply, coming in pipes from water installation. Also, regular electrical supply led to the increase of electrical equipment, like fans, T.V, radio and even dishes which are fitted in some houses. Houses are prepared with some suitable furniture like beds, chairs, tables, wooden cupboards, and others. Modern kitchens are furnished with cupboards, gas or electrical ovens, most or all of the electrical devices like the refrigerator, washing machine, mixer,

electrical kettles and different kinds of aluminum and plastics kitchen equipment.

The bathroom is supplied with pure water and contains a water closet and a sink. Sewage has been made through drains behind the house in special trench, which is drained through regular manual evacuation or by special cars from the Local Authority.

Besides gases, electricity is used as a type of fuel instead of burning the wood. Nevertheless, wood burning has become very limited. The garbage is burned, in the same way like of non-modernized.

One of the most apparent difference in lifestyle between both groups is the nature of nutrition . The main food of non-modernized group is 'Assida', a mixture of flour, water and milk with different ratio according to the level of income. On other hand, there are various types of food concerning modernized group, due to contact with the people coming to work from the modernized community.

II-Health profile:

The major symptoms of both groups are concerned with skin, urinary, abdominal, respiratory and eyes symptoms. There are significant increases concerning non modernized group (Table 1).

Table (1): Symptoms comparison between group A (non modernized community) and group B (modernized community)

	Group A (n:104)		Group B (n:120)		Z Test	P value
	No.	%	No.	%		
Eye symptoms	24	23	12	10	2.638	0.01
Heart symptoms	10	9.6	18	15	-1.236	NS
Chest symptoms	30	28.8	18	15	2.513	0.05
Abdominal symptoms	28	26.9	15	12.5	2.724	0.01
Skeletal symptoms	10	9.6	16	13.3	-0.877	NS
Skin symptoms	32	30.7	12	10	3.926	0.001
Urinary symptoms	25	24.0	12	10	2.804	0.01
Neurological smptoms	6	5.7	2	1.7	1.598	NS

The local examination comparison between both communities indicates that there are significant increases concerning non-modernized group in eye, respiratory system and skin. There are no significant differences in heart, abdominal, skeletal and neurological systems (Table 2).

Table(2): Local examinations comparison between group A (non-modernized community) and group B (modernized community)

	Group A (n:104)		Group B (n:120)		Z test	P value
	No.	%	No.	%		
Eye abnormalities	18	17.3	5	4.2	2.818	0.01
Heart abn.	0	0	0	0	0	0
Chest abn.	17	16.3	8	6.7	2.261	0.05
Abdominal abn.	2	1.9	4	3.3	-0.665	NS
Skeletal abn.	7	6.7	6	6.7	0.547	NS
Skin abn.	21	20.2	6	6.7	3.444	0.001
Neurological abn.	1	1	3	2.5	0.314	NS

abn.=abnormalities

The comparison of urine and stool analysis of both groups indicates that, there is a significant increase in the presence of pus cells concerning non-modernized group, while there is a significant increase concerning modernized group in the presence of different types of crystals (most of these were of uric acid). In the stool analysis, there are significant increase concerning modernized group for the presence of *Entamoeba histolytica* and *Enterobius vermicularis* (Table 3).

Table (3): Urine and stool analysis comparison between group A (non-modernized community) and group B (modernized community)

	Group A (n:104)		Group B (n:120)		Z test	P value
	No.	%	No.	%		
Urine: pus cells	27	26	13	10.8	2.937	0.01
: crystals	5	4.8	18	15	-2.629	0.01
Stool: E. hist.	0	0	17	14.2	-4.45	0.001
: Ent. Ver..	0	0	9	7.5	-3.119	0.001

E. hist = *Entamoeba histolytica.* Ent. verm. = *Enterobius vermicularis.*

There are significant differences in comparison of blood indices between both groups except for MCV (fl) (table 4).

Table (4): Blood indices comparison between non-modernized group (A) and modernized group (B)

	Group A (n:124)		Group B (n120)		Z Test	P value
	mean	±SD	mean	±SD		
Hemoglobin (g/dl)	12.1	2.588	14.3	1.994	7.33	0.001
HCT (%)	37.4	2.612	44.2	1.653	24.3	0.001
MCV (fl)	90.1	2.486	90.6	2.013	0.086	NS

There is a significant increase in CMV antibodies detection concerning modernized group, while there is a significant increase in paratyphoid A antibodies detection concerning non-modernized group. There are no significant differences in Typhoid, paratyphoid B, HCV or in *Brucella* between both groups (Table 5).

Table (5): comparison of antibodies detection for hepatitis C, CMV, *Brucella* and Typhoid of group A (non-modernized community) and group B (modernized community)

	Group A (104)		Group B (120)		Z Test	P value
	No.	%	No.	%		
Hepatitis C	0	0	0	0		
CMV	90	86.5%	120	100%	- 4.022	0.001
Brucellosis	0	0	0	0		
Typhoid O	0	0	0	0		
H	10	9.6%	4	3.2%	1.891	NS
A	94	90.4%	62	51.7%	7.169	0.001
B	6	5.2%	2	1.7%	1.598	NS

Cornell index for comparison indicates that there is increase in the differences concerning non modernized group in vision, respiratory, cardiovascular, digestive, skeletal, skin, nervous and urinary systems and also in exhaustion, irritability and sensitivity, While there is increase in the difference concerning modernized group in depression and anger. On the other hand, there are no significant differences concerning both groups in different diseases, repetition of diseases or tension (Table 6).

Table (6): Cornell index for comparison between total No. of group A (non-modernized community) and group B (modernized community)

Cornell index	Group A (n:106)		Group B (n:134)		Z test	P value
	Mean	±SD	Mean	±SD		
Vision	0.917	1.118	0.358	0.779	13.124	0.001
Resp. system	1.671	1.324	1.160	1.252	5.079	0.001
CV. system	0.350	0.904	0.188	0.551	2.881	0.01
GIT. System	2.231	1.164	1.481	1.660	4.547	0.001
Skeletal system	0.298	0.572	0.179	0.407	2.196	0.05
Skin	0.556	0.789	0.305	0.360	4.007	0.001
Nervous system	0.373	0.554	0.094	0.291	5.519	0.001
Urinary system	0.619	0.956	0.324	0.879	5.001	0.001
Exhaustion	0.358	0.590	0.150	0.579	3.833	0.00.1
Irritability	0.208	0.519	0.462	1.302	-4.233	0.001
Different dis.	0.305	0.589	0.245	0.563	0.882	NS
Depression	0.141	0.475	0.311	0.653	-3.132	0.01
Repetition of dis.	0.500	0.194	0.380	0.655	1.861	NS
Sensitivity	0.773	1.110	0.261	0.531	9.214	0.001
Anger	0.201	0.470	0.915	1.259	-16.224	0.001
Tension	0.104	0.435	0.141	0.443	-0.862	NS

Resp: respiratory, CV.: cardiovascular, GIT: gastrointestinal tract

Table (7): Quality of life comparison between total adult persons of group A (non-modernized community) and group B (modernized community)

Quality of life	Group A (n:106)		Group B (n:134)		Z test	P value
	Mean	±SD	Mean	±SD		
Job	1.368	0.452	1.791	1.056	2.439	0.05
Ambition	1.575	0672	1.522	0.631	- 0.441	NS
Health	1.894	1.895	2.448	0.697	2.893	0.01
Relation with K	1.587	1.304	1.619	1.362	0.502	NS
Relation with P	1.736	1.481	1.875	0.980	0.881	NS
Social relations	1.670	1.555	1.604	0.792	- 0.624	NS
Leisure time	1.594	1.088	2.119	0.458	1.783	NS
Religious supp.	1.990	0.771	2.082	0.734	0.486	NS
Hobbies	1.132	0.366	2.157	0.679	7.240	0.001
Time manag.	1.094	0.299	1.351	0.637	3.818	0.001
Residential area	1.142	0.444	1.463	0.613	3.961	0.001
Income	1.642	0.585	2.373	0.589	3.953	0.001
Capability	1.774	0.816	1.511	1.131	1.888	NS
Recreation	1.651	0.659	1.694	0.683	0.313	NS
Communication	1.405	0.684	1.448	0.381	0.417	NS
Sport activities	1.991	0.852	2.067	0.803	0.409	NS
Sleep	1.264	0.571	1.246	0.552	- 0.242	NS
Weight	2.274	0.694	2.231	0.668	1.064	NS
Coffee and tea	2.142	0.936	2.015	0.733	- 0.647	NS
Decision making	1.160	0.267	1.433	0.674	3.410	0.001
Mode	1.736	0.974	1.873	0.832	0.881	NS
Anger	2.245	1.080	2.150	0.715	- 0.454	NS
Self respect	2.047	0.873	2.112	0.878	0.333	NS

K: kids, P: parents, manag.: management

The quality of life comparison illustrates that there are significant increases concerning modernized group in job, health, hobbies, time management, residential area, income and decision making, while there are no significant difference in the other items of ambition, relation with kids, relation with parents, social relation, leisure time, religious support, capability, recreation, communication, sport activities, sleep, weight, coffee and tea, mode, anger and self respect between both groups (Table 7).

DISCUSSION

The process of modernization is both inevitable and, on the whole, a good thing. Modernization is very highly probable because modernization societies are more powerful than 'traditional' societies, and it is preferable to the alternatives because modernizing societies are better and more hopeful places to live for most of the population, most of the time. The combination of necessity and desirability constitutes the modernization imperative (Bruce and Peter, 2003).

The importance of the triangle area (towns of Shalatein, Abu-Ramad and Halaib) arises from its own specific geographical, environmental and climate nature that are different from other Egyptian regions. It is considered the southern gate of Egypt. This area is an example of the remote and sparsely areas that are suffering from different environmental and residential troubles. On the other hand, this area is rich in natural wealth. Due to the economical integration between Egypt and Sudan, Egyptian government has paid good attention to this community, since the year of 1996, and started a strong

civilization strategy in the form of building houses, schools, installation of electrical power stations, regular clean water supply, station of T.V and radio broadcasting and other infra structures.

In this study, we try to evaluate the role that can be played by supplying a better way of living upon quality of life and its reflection on health status of the community involved.

The major symptoms of both groups are concerned with skin, urinary, abdominal, respiratory and eye symptoms. There is a significant increase concerning non modernized group which may be explained by the poor sanitation and poor standards of hygiene. A similar observation was reported by Merican (1997), who studied the relation between the spread of infectious disease like typhoid fever and the poor standard of hygiene.

There is a significant increase concerning non-modernized group in the local examinations of various systems in comparison between both groups. These results may be due to the personal hygienic attitude, like washing hands before and after food intake and after defecation, which is not considered of priority, an attitude usually characterizes the low income communities (King, 1990). A similar finding had been found at Nubian community living at Abu Sembel Village by Moustafa (1999).

One of the strange findings of this study, that no parasitic manifestations could be detected in stool analysis of non modernized group, while *Entamoeba histolytica* and *Enterobius vermicularis* were detected in the stool analysis of modernized group. This may be due to the nature of nutrition of non-modernized group as they depend only on 'assida' as a source of diet,

while the modernized group still behave with some degree of bad hygienic attitude as eating improperly washed vegetables, using water closet in the same house, low level of education and consequently poor socio-economic and hygienic conditions of families that appear to be powerful determinants of infection. Nematian *et al.* (2004), studied the prevalence of intestinal parasitic infections and their relation with socio-economic and hygienic habits and reported about the strong correlation between them.

In our study, we found that there is an increase in the incidence of renal crystals, specially of uric acid, concerning modernized group. This significant increase may be due to the increase of consumption of animal and vegetable proteins. This result was also reported by Hess (2002) who studied the impact of nutrition on the recurrence of a kidney stone. On the other hand, the increase of renal infections concerning non-modernized group could be referred to the drinking of unpurified water preserved in plastic jars by this group.

There are significant increases in means of hemoglobin contents and HCT% but not in MCV (fl) concerning modernized group compared with non-modernized group. This may be due to the nature of nutrition. Abidoye and Akande (2000) studied similar communities in Nigeria and reported a similar finding.

In our study, we found a high percentages of CMV antibodies in both groups (82.1% in non-modernized group and 100% in modernized group). The high percentage of CMV in this study, are similar to a previous Egyptian rural study (El-Nawawy *et al.*, 1996) that 96% of mothers and their infants

were CMV-IgG seropositive at the time of delivery and also with the fact that CMV is prevalent in 50-80% of the population worldwide (Sarid *et al.*, 2002).

The significant increase of CMV antibodies detection concerning modernized group in our study may be referred to the closeness of members of family inside their houses. Stagno *et al.* (1989) reported that hygiene alone cannot explain the higher infection rates, rather the closeness of contacts within population groups appears to be more important. The spared of CMV requires very close or intimate contact because it is very labile. Very high rates of infection among children have been recorded in isolated locations. Martin (2001) reported that when an infected child is introduced into a household, 50% of susceptible family members seroconvert within 6 months. All these factors together can explain our results.

There is a significant increase in paratyphoid A concerning non-modernized group. This can be explained by the bad personal hygiene and absence of hygienic and environmental facilities in the un-modernized which considered as predisposing factors for typhoid fever transitions. This is similar to the finding of Gasem *et al.* (2001) who reported that multivariate analysis showed that living in a house without water supply from the municipal network, and with open sewers was associated with typhoid fever

The prevalence of HCV in a population can be predicted by risk factors associated with the transmission of infection. These risk factors, include injection drug use, blood product transfusion, organ transplantation, hemodialysis, occupational injury, sexual transmission, and vertical transmission (Yen *et al.*, 2003). In our study, there was no detection of

hepatitis C antibodies in both groups. This can be explained by the absence of predisposing factors of HCV infection in both groups.

In this study, no Brucella antibodies could be detected in both groups. So, the triangle area may be considered as a free area of brucellosis. This could be explained by the remote and sparsely nature of this community and to the absence of animal import.

Cornell index comparison between non-modernized group and modernized group reflects the effect of environmental changes on the health of both groups. Our study illustrates that there are significant increases concerning non-modernized group in the score of thirteen (13) scales of Cornell index, indicating that non-modernized group is suffering more than modernized group except in anger, which is more in modernized group. There were no significant differences between both groups in different diseases, repetition of diseases and tension. The results of our study are nearly similar to Mahmoud's study (2001) who applied Cornell index upon a suitable number of American and Egyptian students. In such study there were significant increases in 50% of Cornell index concerning Egyptian student t. Another similar study was done by Mazen (2000) on rural and urban students.

Our study reflects obviously the effect of modernization upon health status through the significant differences in the quality of life between both groups. There is a significant increase in the total score in the quality of life concerning job, health, hobbies, time management residential area, income and decision making in modernize group. A similar result was reported by Li *et al.* (2001), who studied the quality of life of rural and urban residents in

China and compared there results with that in Hong Kong and US populations.

RECOMMENDATIONS

1-Improving the hygienic and environmental facilities to illustrate the health improvement and economic yield as this area is considered the safety healthy area between Egypt and African countries.

2-Proper health education to withstand the spread of communicable diseases among underdeveloped communities.

3-Prevention of prevailed diseases by preparing health measuring like vaccination against communicable diseases like typhoid fever.

4-Keeping this area free of brucellosis by application of prophylactic measures to make this area as a breading zone for live stock.

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أثر نمط الحياة المتمدين على المستوى الصحي لسكان مثلث شلاتين و أبورماد و حلايب

[٢٣]

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المستخلص

تعتبر منطقة مثلث شلاتين وأبورماد وحلايب مثال للمناطق النائية والمنعزلة في مصر. و تقع هذه المدن في الركن الجنوبي الشرقي بالقرب من ساحل البحر الأحمر. ويبلغ عدد سكانها حوالي ٢٤٠٠٠ نسمة. . وقد أولت الحكومة المصرية منذ عام ١٩٩٦ الكثير من الاهتمام بهذه المنطقة ووضعت لها استراتيجية تحديث في شكل بناء العديد من المساكن والوحدات الصحية ومحطات تحلية المياه ومحطات توليد الكهرباء والبث الإذاعي والتليفزيوني.

أجريت هذه الدراسة على ٣٢٩ فرد من السكان لتقييم الدور الذي يمكن أن يحدثه التمدين علي نوعية الحياة وانعكاسه على الأبعاد الصحية والنفسية للإنسان في هذه المناطق البدائية وقد شملت الدراسة كل الأعمار فيما عدا الدراسة النفسية التي ضمت الأفراد البالغين.

وقد أظهرت الدراسة النتائج الآتية:

- التطور البيئي والمستوى المعيشي لأفراد المجتمع المتمدين نتيجة لارتفاع المستوي الخدمي والصحي.
- ارتفاع نسبة الأعراض المرضية لأفراد المجتمع غير المتمدين.
- ارتفاع معدل وجود الأجسام المضادة لمرض البارا تيفود(أ) لأفراد المجتمع غير المتمدين.
- ارتفاع معدل وجود الأجسام المضادة لفيروس السيتوميجالو لأفراد المجتمع المتمدين.

عدم وجود الأجسام المضادة لكل من الالتهاب الكبدي الفيروسي (س) أو البروسيلا في كل من أفراد المجتمعين.

- ارتفاع مستوي النوعية البيئية لأفراد المجتمع المتمدين
- ارتفاع معدل الاضطرابات السيكوسوماتية والعصابية لأفراد المجتمع غير المتمدين.