Biological Characteristics of Smokers and Nonsmokers Among Males and Females in Nablus Area in the West Bank

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ملخص

يتضمن هذا البحث دراسة بعض المتغيرات البيولوجية المتعلقة بالتدخين لعدد من المدخنين وغير المدخنين في منطقة نابلس في الضفة الغربية. وتتكون هذه الدراسة من استبيان تم تعبئته من قبل ٩٩٠٠ شخصاً يمثلون مختلف المستويات العلمية والمهنية، ويسكنون في مدن وقرى ومخيمات منطقة نابلس ويبلغ عدد المدخنين منهم ٥٤٠٠ شخصاً، أما الباقون فهم غير مدخنين. لقد أظهرت هذه الدراسة بأن معدل وزن المدخن أقل من غير المدخن ولكن معدل طوله أعلى، كذلك فإن معدل عدد سجائر المستهلك يومياً هو ١٨,٤ سيجارة، وأن سن بدء التدخين للذكور هو ١٨,٢ سنة وللإناث هو ٢١,٦ سنة. وقد وجد بأن بدء ممارسة التدخين يعود إلى التشجيع المباشر من قبل الأصدقاء والأقران، وإلى التأثر غير المباشر بالأشقاء والآباء المدخنين.

ABSTRACT:

The smoking-related variables for somkers and nonsmokers were studied in Nablus Area, in the West Bank. The population study included a questionnaire filled out by 9900 West Bankers living in cities, villages and camps, representing different occupational and educational levels. The study included 5400 smokers and 4500 nonsmokers. This investigation showed that

the average body weight of smokers was lower than that for nonsmokers, but the average height was higher. The onset of smoking was found to be directly encouraged by peers and siblings, and indirectly encouraged by brothers and parents. The age-started smoking was found to be 18.2 years in males, and 21.6 years in females.

Introduction

Smoking is one of the most widely rampant habits. It is observed among males, females, youths, adults and even children. Inspite of the great health detrimental effects that smoking can cause, like bladder cancer, lung cancer, heart diseases, and infertility,[1,2,3,4,5] still millions of people consume huge number of cigarettes daily.

Cigarette smoking was found to be more prevalent among lower-educated groups, people of oriental origin, large families and religiouly non-observant persons[6,7]. Many investigators belive that smoking of peers, siblings, adults and parents increase the probability of smoking onset of children[8,9], especially in younger age. Teenagers begin smoking as groups in the school and in neigborhoods and alleyways. They imitate adults, and think that through smoking they can reach their level or rank. Teenagers try to prove themselves through smoking[4].

This study was conducted to know the percentage of smokers in families, the age at which most people begin their smoking habit, the average body weight and height of smokers, and the percentages of educational levels among smokers. It also concentrates on the role of educational levels among smokers. It also concertrates on the role of friends, peers and family

members on addiction of this habit.

Methodology

This study was conducted in the West Bank in the Years 1988 - 1990. The study was concentrated on Nablus Area including the villages, camps and small cities close to Nablus City. This study was achieved by distributing randomly a questionnaire to people of different ages, sexes, marital status, occupational and educational levels. The questionnaire was filled by 9900 person, 5400 were smokers and 4500 were nonsmokers. It included questions about the age of the onset of smoking, number of cigarettes smoked daily, who of the family members smokes and how smoking began. In addition it included questions about the marital status, the weight, the height, and the place of residence. The questions about smoking of friends and family members were designed to provide information on the causes of smoking and how such a habit begins.

The result were analyzed by the Fisher Z test, and the significance was observed at $p < 0.05$ and $p < 0.01$.

Results

This study consisted of 5400 smokers who had filled out a questionnaire. 91.2% of them were males and 8.8% were females. Married people constituted 54% of the sample, the remainder were single. The percentage of smokers in each family, was 17.03% for smokers and 12.88% for nonsmokers. The male nonsmokers constitute 89.9%, while the female nonsmokers constitute 10.1% of the sample.

The population study was done on smokers in Nablus, Tulkarm and Jenin cities and in the villages and camps lying close to these cities. 42.5% of the smokers are living in cities, 29.7% in villages & 27.8% in camps (Table1).

Table 1: Place of residence among smokers in the sample

Place of residence	Males		Females		Total	
	No.	%	No.	%	No.	%
city	2007	40.8	288	60.4	2295	42.5
village	1530	31.1	72	15.1	1602	29.7
camp	1386	28.1	117	24.5	1503	27.8
Total	4923		477		5400	

Table 2 shows the means & standard errors of smoking related variables for smokers & nonsmokers. The mean height is 173.0 cm for smokers & 168.3 cm for nonsmokers. The mean weight is 71.9 kgm for smokers & 72.8 kg for nonsmokers. It also shows that males start smoking at a mean age of 18.2 years, while females at 21.6 years. The Average number of cigarettes smoked daily was 18.4.

Table 2: Smoking related variables for smokers and nonsmokers (Mean ∓ S.D.)

Variable	Males		Females		Total	
	smokers	nonsmokers	smokers	nonsmokers	smokers	nonsmokers
Mean age (year)	31.0∓8.2	30.01∓9.2*	33.9∓10.1	28.6∓7.2**	31.3∓9.3	29.8∓9.1**
Mean Height(cm)	173.3∓8.1	169.9∓7.1**	165.9∓7.2	163.8∓7.1**	173.0∓8.4	168.3∓8.1**
Mean Weight(kgm)	73.0∓11.1	74.6∓11.1*	64.8∓9.3	64.1∓9.3N.S	71.9∓9.4	72.8∓11.2*
Mean No. of cig./day	19.2∓7.3	-	9.5∓5.3	—	18.4∓7.5	—
Mean Age started smoking (year)	18.2∓4.1	-	21.6∓5.1	—	18.5∓4.5	—

N.S: not significant

*: The difference is significant ($p < 0.05$)

**: The difference is significant ($p < 0.01$)

The percentages of the different occupational levels in the sample are shown in Figure 1. Professionals, workers & employees constitute the highest percentages which are 25.1%, 24.1% & 18.2%, respectively.

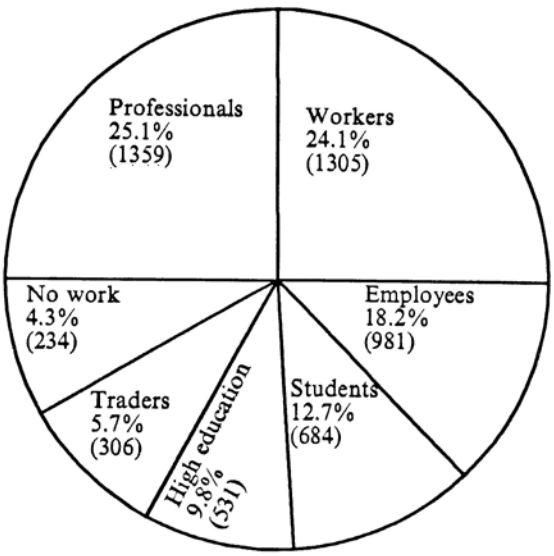

Fig.1: Percentages of occupational levels among smokers.

The influence of friends & family members on addiction of the smoking habit by people in the sample is shown in Table 3. This table shows that the beginning of smoking in 84.5% of the people was encouraged by their friends & peers.

Table 3: The role of friends and family members in acquisition of smoking habit.

Beginning of smoking	No.	%
Encouraged by friends	4563	84.5
Encouraged by parents & brothers	171	3.2
Another source of encouragement	666	12.3

Tabel 4 shows that the smoking percentage among fathers of smokers is 43.8% but among fathers of nonsmokers is only 26%. The smoking percentage among brothers is 66% for smokers & 43.6% for nonsmokers. This table also shows that 12.8% of smokers have no smokers in their families, while 26% of the nonsmokers have no smokers in their families. Furthermore, 92% of the smokers have one or more smoking friend, while 71.9% of the nonsmokers have one or more smoking friend.

Table 4: Smoking percentage among family members and friends.

Family member or friend	Smokers		Nonsmokers	
	No.	%	No.	%
Father	2367	43.8	1170	26.0
Mother	558	10.3	181	4.2
One or more brother	3564	66.0	1962	43.6
Father & One or more brother	1755	32.5	729	16.2
No smokers in the family	693	12.8	1170	26.0
One or more friend	4968	92.0	3235	71.9
No friends	432	8.0	1265	28.1
Total	5400		4500	

Table 5 shows the age started smoking in males & females of the 46.2% of the people began their smoking habit at the age of 16-21 years. 31.3% began at the age period of 10-15 years. Only 1.5% began their smoking before the age of 10 and only 2% began after the age of 40.

This table aslo demonstrates that the highest percentage of male smokers are present among the age periods of 10-15 and 16-21 years, while in females the highest percentages are present among the age periods of 16-21 and 22-27 years.

Table 5: Smoking starting age by sex.

Age (Year)	Males		Female		Both sexes	
	No.	%	No.	%	No.	%
< 10	81	1.7	0	0	81	1.5
10-15	1620	32.9	72	15.1	1692	31.3
16-21	2286	46.4	207	43.4	2493	46.2
22-27	621	12.6	126	26.4	747	13.8
28-33	153	3.1	36	7.5	189	3.5
34-39	72	1.5	18	3.8	90	1.7
> 40	90	1.8	18	3.8	108	2.0
Total	4923	100.0	477	100.0	5400	100.0

The age distribution among male & female smokers is shown in table 6. The highest percentage (43.2%) of the male & female smokers was found to be present at the age of 21-30 years. The seconed highest percentage (18.4%) is present among the age period of 11-20 years. Fortunately, the lowest percentage was found to be among children less than 11-years- old (0.3%).

Table 6: Age distribution by smokers sex.

Age (year)	Males		Female		Both sexes	
	No.	%	No.	%	No.	%
⩽ 10	14	0.3	0	0.0	14	0.3
11-20	931	17.2	63	1.2	994	18.4
21-30	2106	39.0	225	4.2	2331	43.2
31-40	810	15.0	72	1.3	882	16.3
41-50	522	9.7	45	0.8	567	10.5
51-60	342	6.3	45	0.8	387	7.1
> 60	198	3.7	27	0.5	225	4.2

The mean hight, the mean weight & the Quetelet Index (weight in kgm/height in meter 2) for smokers & nonsmokers are shown in table 7. The mean weight for nonsmokers (72.8 kgm) is more than that for smokers (71.9 kgm), while the mean height for smokers (173 cm) is more than that for nonsmokers (168.3cm). The Quetelet Index for nonsmokers is 1.77 kgm/m^2 more than that for smokers. ($p < 0.05$).

Table 7: No. of cigarettes smoked daily by weight and height

No. of cigarettes	No.	Mean weight (kgm)	Mean height(cm)	Wt./Ht^2 Quetelet Index (kgm/m^2)
0 (nonsmokers)	4500	42.8	168.3	25.79
1-10	1044	68.1	172.6	22.86
11-20	2547	71.6	173.4	23.81
21-30	1017	73.4	172.1	24.78
31-40	522	74.2	171.6	25.20
41 or more	270	80.8	177.5	25.64
Total (smokers)	5400	71.9*	173.0**	24.02*

* the difference is significant ($p < 0.05$)

** The difference is significant ($p < 0.01$)

Table 8 shows the number of cigarettes smoked per day by males & females of the sample. The highest percentage of males (48.4%) smoke 11-20 cigarettes per day, while the highest percentage of females (60.4%) smoke 1-10 cigarettes per day. Heavy smokers (who smoke more than 30 cigarettes a day) are all males & constitute less than 15% of the total population study.

Table 8: Number of cigarettes smoked per day by sex.

No. Of cigarettes	Males		Females		Total	
	No.	%	No.	%	No.	%
1-10	756	15.4	288	60.4	1044	19.3
11-20	2385	48.4	162	33.9	2547	47.2
21-30	990	20.1	27	5.7	1017	18.8
31-40	522	10.6	0	0.0	522	9.7
41 or more	270	5.5	0	0.0	270	5.0

Table 9 shows the number of cigarettes smoked daily by males & females in cities, villages & camps. Male smokers who smoke 11-20 cigarettes per day constitute the highest percentage in cities (18.7%), villages (14.7%) & camps (11.3%). In cities, 0.5% of the females in the whole samaple smoke more than 21 cigarettes per day, while in villages & camps none of the females smoke more than 21 cigarettes per day. The percentage of smokers is highest in cities (43.3%), then in villages (31.3%) & finally in camps (25.5%).

Table 9: Number of cigarettes smoked by sex and area.

No. of cigarettes	City			Village			Refugee camp		
	M	F	T	M	F	T	M	F	T
1-10 No	387	189	576	243	36	279	162	63	225
	7.2	3.5	10.7	4.5	0.7	5.2	3.0	1.2	4.2
11-20 N0.	1008	81	1089	792	27	819	612	72	684
%	18.7	1.5	20.2	14.7	0.5	15.2	11.3	1.3	12.7
21-30 N0.	441	18	459	342	0	342	189	0	189
%	8.2	0.3	8.5	6.3	0	6.3	3.5	0	3.5
31-40 No.	144	0	144	126	0	126	207	0	207
%	2.7	0	2.7	2.3	0	2.3	3.8	0	3.8
> 40 No.	54	9	63	126	0	126	72	0	72
%	1.0	0.1	1.2	2.3	0	2.3	1.3	0	1.3
Total No.	2034	297	2331	1629	63	1692	1242	135	1377
%	37.8	5.4	43.3	30.1	1.2	31.3	22.9	2.5	25.5

M: male F: female T: Total

Discussion

This study shows differences in smoking-related variables for smokers and nonsmokers. The mean body weight of nonsmokers is 0.9 kgm more than that for smokers (significance $p < 0.05$).

Jacobs and Gotenborg (1981) found a difference in body weight of about 2 kgm between smokers and nonsmokers. Furthermore, Mellstrom and coworkers (1982) found that smokers have lower body weight and decreased muscle strength[10]. The mean height for smokers is 4.7 cm more than nonsmokers (significance $p < 0.01$). Similar results were also found by other investigators (11,12). It seems that for some reason, whether social, economic, psychological or genetic, smoking is associated with slightly taller men[7].

One possible explanation for these results is that it occurs as a result of caloric utilization by the release of adrenalin (or other hormone affecting metaolism) due to smoking[11] or that smoking is an appetite suppressant.

The Quetelet Index for nonsmokers is 1.77kgm/m^2 more than that for smokers (significance $p < 0.05$) which means that nonsmokers are a little bit more obese than smokers. Such results coincide with those of Kromhout and coworkers.[13]

More than 84% of the smokers began their smoking due to encouragement by their friends. Furthermore, 92% of the smokers have one or more smoking friend. Thus, the smoking onset by teenagers is often done against the parents' wishes. It is believed that such behavior is a mode of rebelliousness and an attempt to prove oneself and independence[14,15].

The age started smoking was foung to be 3 years earlier in males than in females. Colebatch and cowerkers (1985) found that the age started smoking in males is 2 years earlier than in females[16]. Such a finding suggests a greater role of the family in socializing women and that the social effect of the family on male teenagers is less than that on females.

The absence of smokers among females of less than 10 years & the presence of 1.7% male smokers in this period suggests that the influence of extrafamilial factors, such as peer group pressures, is likely to be stronger among males[17].

The mean number of cigarettes smoked daily by females is about half that smoked by males. Furthermore, females that smoke more than 10 cigarettes per day constitute a percentage which is half that of males. Heavy smokers among males constitute 16%, while there are no heavy smokers among females. Smimlar results were observed by Faraj (1987) and Al-Zahar (1987) in their studies on females in Egypt and Gaza Strip respectively[18,19]. These findings can be explained through the social point of view, which disrespects the smoking woman, and may be because men have started smoking many years before women.

This Population study shows that the percentage of smokers in each family is about 15% and that more than 43% of the smokers have a moking father and 66% have one or more smoking brother. Farag (1987) have found that 53% of the smoking students in Egypt have a smoking father[18]. Furthermore, Al-Zahar (1987) found that each smoker in Gaza Strip had 1.6 smoking brother, while the nonsmoker had 1.02 smoking brother[19]. It is thus believed that smoking of peers, siblings, brothers and parents increase the probability of smoking onset[8,9,20,21,22].

The absence of heavy smokers among females in villages and camps can be explained on the basis that villages and camps are more conservative than cities and that smoking by women is a bad attitude and hurts the woman's postion and reputation. Higher smoking percentage was also observed among female school

students in less conservative places such as in the city of Ramallah & its environs[23].

In almost all areas surveyed, the percentage of smokers is higher among males in cities than in villages and cmaps. This observation may be explained on the basis that life in cities is more open than in villages and camps. And that youths in cities have higher opportunity to get benefit from the modern means of civilization like cinemas, and clubs. Furthermore, familes in cities are usually richer than those in camps and villages. This gives their children higher opportunity to buy cigarettes and become smokers.

Finally, it can be said that smoking has a detrimental effect on healthy and that teenagers are often become addicted to this habit through their friends or by imitating their parents. Therefore, the parents should set a good example for their children. They should stop smoking before they ask their children to do so. They should also convince their children to cut off their relations with their smoker friends.

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References

1 - Helsing K. J.; Sandler D. P.;: and Comstock G. W., Heart disease mortality in nonsmokers living with smokers. Am. J. Epidemiol. **127**, 915 (1988).

2 - Slattery M.L.; Schumacher M.C.; West D.W., Smoking and bladder cancer. The modifying effect of cigarettes on other factors. Cancer, **61**, 402 (1988).

3 - Al-Aqtum M.T., "Smoking between Biology & Religion". Published by Al Qadisya Press, Jerusalem , 1990, 153 pages.

4 - Chia S.E.; Ong C.N. Effects of cigarette smoking on human semen quality, Arch. Androl. **33**: 163-168 (1994).

5 - Shine B.; Fells P.; Edwards O.M.; Weetman A.P., Association between Grave's ophthalmopathy & smoking. Lancet. **335**, 1261 (1990).

6 - Goldbourt U.; Medalie J.H., Characteristics of smokers, nonsmokers & exsmokers among 10,000 adult males in Israel. I. The distribution of selected sociodemographic and behavioral variables & the prevalence of disease. Isr. J. Med. Sci., **11** 1079 (1975).

7 - Goldbourt U.; Medalie J.H., Characteristics of smokers, nonsmokers & exsmokers among 10,000 adult males in Israel. II. Physiologic, biochemical & genetic characteristics. Am,. J. Epidemiol., **105**, 75 (1975).

8 - Felimban F.M.; Jarallah J.S. Smoking habits of secondary school boys in Riyadh, Saudi Arabia. Saudi Med. J. **15**: 438-422 (1994).

9 - Salber E.J., Smoking among teenagers. Bull. N.Y. Acad. Med.,

44, 1521 (1968).

10 - Mellstrom D.; Rundgren A., and Jagenburg R., Tobacco smoking, aging & health among the elderly. A longitudinal population study of 70 years old men and age cohort comparison. Age & Ageing **11,** 45 (1982).

11 - Jacobs D.R.; Gottenborg S., Smoking and weight. The Minnesota research clinic. Am. J. Publ. Health 71, 39 (1981).

12 - Mcdermot M. T.; Witte M.C., Bone mineral content in smokers. South. Med. J., **81,** 477 (1988).

13 - Kromhout D.; Saris W.H.M.; and Horst C.H., Energy intake, energy expenditure and smoking in relation to body fatness: The Zutphen study. Am.J. Clin. Nutr., **47,** 668 (1988).

14 - Bonham G.S.; Wilson R.W., Children's health in families with cigarette smokers. Am. J. Publ. Healty **71,** 290(1981).

15 - Mittelmark M.B.; Murray D.M. & Luepker R. Predicting experimentation with cigarettes. The childhood antecedents of smoking study. Am. J. Publ. Health, **77,** 206 (1987).

16 - Colebatch H.J.H.; Greaves I.A. and Ng C.K.Y., Pulmonary distensibility and ventilatory function in smokers. Bull. Eur. Physiopathol. Respir,. **21** 439 (1985).

17 - Markides K.S.; Coreil J. and Ray L.A., Smoking among mexican Americans. A three generation study. Am. J. Publ Health **77,** 708 (1987).

18 - Faraj, H.A. "Smoking", Qayema Library, Cairo, Egypt (1987), 128 pages.

19 - Al-Zahar M.K., "Smoking in Gaza Strip", Dept. Public Relations, Islamic University-Gaza (1987), 74 pages.

20 - Ahlgren A.; Norem A.A.; Hochhauser M.; and Garven J., Antecedents of smoking among adolescents. J. Drug Educ.,

12, 325 (1982).

21 - Jarallah J.S. Smoking habits of medical students at King Saud University in Riyadh. Saudi Med. J. **13:** 510-513 (1992).

22 - Weitzman M.; Gortmaker S.; & Soboi A. Maternal Smoking & behavior problems of children. Pediatrics **90:** 342-349 (1992).

23 - Kamal M.S.; Blum M.; and Rabah J., The prevalence of smoking among prepartary and secondary school children in Ramallah Arean. "WHO health services research workshop", Jerusalem (1987).