



Health Behavior and Religiosity among Israeli Jews

Amir Shmueli PhD¹ and Dov Tamir MD MPH²

¹Department of Health Management, Hebrew University School of Public Health, Jerusalem and Gertner Institute for Health Policy Research, Sheba Medical Center, Tel Hashomer, Israel

²Ministry of Health and Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

Key words: health behavior, religiosity, Israel, Judaism

Abstract

Research findings have shown the protective effect of religiosity – among both Christians and Israeli Jews – in terms of morbidity and mortality. To explore the relationship between religiosity and health behavior as a possible explanation for these findings we conducted 3056 telephone interviews, representing the Israeli adult urban Jewish population. Health status, health behavior, frequency of medical checkups, and eating habits were measured. Logistic regressions were used to estimate the religiosity gradient on health behavior, controlling for other personal characteristics. We found a lower prevalence of stress and smoking among religious persons; we also found that religious women exercise less than secular women and that religious people – both men and women – are more obese than their secular counterparts. While no religiosity gradient was found with relation to the frequency of blood pressure, cholesterol and dental checkups, religious women are less likely to undergo breast examinations and mammography. Finally, religious people generally follow a healthier dietary regime, consuming less meat, dairy products and coffee, and much more fish. The lower smoking rates, lower levels of stress, and the healthier dietary regime are consistent with the previously shown longer life expectancy of religious people; however, obesity might become a risk factor in this community.

IMAJ 2007;9:703–707

Many researchers have documented a positive association between religiosity and health. Ellison and Levin [1], reviewing the accumulated findings, conclude that salutary effects of religious involvement persist despite an impressive array of statistical controls for social ties, health behaviors, and sociodemographic variables. This applies to both physical and mental health. Another review claims that a lack of religious involvement has an effect on mortality that is equivalent to 40 years of smoking one pack of cigarettes per day [2]. A recent survey [3] concluded, however, that of the several hypotheses proposed, the findings supported a positive association only between church attendance and lower mortality rates.

Empiric results indicate that religious communities – e.g., Seventh Day Adventists, Mormons and Jews – often share social support and several common cultural characteristics such as a healthier diet and less drinking and smoking, which affect health. Jarvis and Northcott [4] showed that church members have better health behaviors and live several years longer than others.

Goodloe and Arreola [5] reviewed several studies and found the relationship to be beneficial, including lower risk of cardiovascular disease, less hypertension and higher threshold for pain. Rew and Wong [6] reviewed the literature on the relationship between religiosity and health attitudes and behaviors in adolescents and found that religiosity might be an important correlate of promoting health attitudes and behavior in this age group.

Most of the research focused on the health-religiosity connection among Christians and on denominational differences (involving, for example, Mormons or Adventists) in the United States. Several studies, however, examined the health-religiosity connection among Israeli Jews. Friedlander et al. [7] found that secular persons had a higher prevalence of smoking and worse results on lipid count, while controlling for age, gender, ethnic origin, body mass index, and social class. These differences were attributed, at least partially, to different dietary regimes and nutrient intakes subject to eating kosher meat and avoiding dairy products concurrently or right after the consumption of meat. The lower levels of risk for coronary heart disease among religious people might explain the lower incidence of acute myocardial infarction in these groups compared with secular groups reported previously [8]. In a case-control study of survivors of a first myocardial infarction [9], secular individuals had a substantially higher risk than religious individuals of both genders, controlling for age, ethnic origin, education, smoking behavior, physical exercise, and body mass index. Another study [10] examined the survival-religiosity connection by comparing religious and secular kibbutzim (collective settlements). It studied 11 secular and 11 religious kibbutzim, matched by geographic location (using the same hospital), members' age (older than 40 years), and year of establishment. Since all kibbutzim share a similar social and economic structure, social support – which is believed to be a major channel through which religiosity exercises its effect on health – is held constant. Using 16 years of all-cause mortality data, they found that mortality was considerably higher in secular kibbutzim. A recent report of the Central Bureau of Statistics and the Ministry of Health ranked Israeli localities according to mortality rates and related them to socioeconomic and demographic indices [11]. The results indicate that two localities characterized by high proportions of ultra-Orthodox Jews – Jerusalem and Bnei

Brak – have the lowest age-adjusted death rate, particularly in the 75+ age group. These two cities have a relatively low mean income but relatively high levels of education.

Several explanatory mechanisms whereby religious involvement may lead to positive health outcomes have been proposed [1,10]. They include safer behavior and personal lifestyles; social integration and support; a sense of meaning, coherence and positive emotions; and an “invisible energetic effect” of faith, spirituality and frequent prayer on immunity, host-resistance, and healing through psychophysical pathways. The intensity of these effects might differ across men and women due to different social roles, health behavior (e.g., smoking), and different exposure to religious practice (see below).

The purpose of the present analysis was to focus on the first mechanism, namely, behavior and lifestyle. We used the 2000 Ministry of Health’s Survey on Health Knowledge, Attitude, and Behavior to explore differences in reported health and health behavior among Israeli Jews by religiosity. Unfortunately, the survey does not allow for a “complete” examination of the effect of health behavior on health and mortality, controlling for all the other protective mechanisms of religiosity. Rather, we focus on differences in health behavior, and relate these differences to the previously established religiosity-related differences in health and mortality.

Data and variables

The data were collected by telephone-structured interviews conducted by the Surveys Unit of the Israeli Center for Disease Control, Ministry of Health. A random sample of 9000 telephone numbers was drawn from the national telephone owners registry in the Jewish population residing in cities with more than 10,000 inhabitants (another sample included non-Jewish Israelis, who constitute about 20% of the Israeli population. In this paper we focus on the Jewish population only). In these cities, where 97% of the Jewish population resides, telephone ownership is about 95%. Each telephone number was contacted up to eight times. Thirty percent of the numbers turned out to be fax numbers, business numbers, numbers not connected, a permanent no-reply, or households with no member aged at least 18. Of the 6300 valid numbers, the intended final sample consisted of 3193 people (51%). The reasons for non-response were broken down as follows: 23% refused to answer or stopped the interview, 20% were not interviewed because of communication problems (hearing, understanding, or language problems), and in 6% the interview was not completed for other reasons. Choosing the gender of the interviewee among the household members aged 18+ ensured that the gender composition of the sample matched that of the population. The working sample for the present analysis included 3056 people.

Measurement of general health behavior

Health behavior was indicated by seven tracers: any sport activity lasting 20 minutes or more (almost daily/less frequently); sun protection by always wearing a hat/covering hair (yes/no); sun protection by always wearing long sleeves (yes/no); current smoking status (yes/no); among smokers up to 20 cigarettes a

day (yes/no); ever smoked (yes/no); and body mass index > 30 (yes/no, calculated from reported height and weight).

In addition, the feeling of stress was measured by the question: “Do you feel stressed?” the answers to which were “all or most of the time,” “sometimes,” “seldom” and “never or almost never.”

The frequency of medical checkups

The subjects were asked whether or not they had undergone the following examinations in the previous year: blood pressure, cholesterol, breast clinical examination, mammography, or dental (during the previous 6 months).

Eating habits

The subjects were asked about the frequency during the previous month with which they ate numerous food items, including red meat, chicken, fish, fat and non-fat dairy products, eggs, fruits and vegetables, and bread. The validity of this measurement stems from past experience: it has been used every second year since 1994, and the eating habits data were almost the same in the repeated surveys.

The measurement of religiosity

Self-reported religiosity was measured on a four-category scale: secular, observant (or traditional), religious and ultra-Orthodox. This scale has been found valid and reliable in eliciting information on religious beliefs and practice among Israeli Jews [12]. This simple classification distinguishes well among Jews with differing intensities of practice and belief in God. It ranges from “secular” persons who typically do not perform any religious rites, to “ultra-Orthodox” persons who observe all commandments strictly, live in separate communities and usually dress differently.

It should be noted that measuring religiosity in that way avoids possible simultaneity problems, which arise when religiosity is measured, as is done in several studies, in terms of the frequency with which people attend public worship at a church. The intensity of visits to church (synagogue, or other house of worship) might be affected by the person’s mobility and state of health.

Other personal characteristics

The survey collected additional personal data on age, gender, education (primary school, high school, post-high school, and academic), marital status, ethnic origin (Asia-Africa, Europe-America, and Israeli born), and socioeconomic status that was indicated by the number of persons per room in the household.

Statistical analysis

Multivariate logistic regressions were used to estimate the odds ratios and their 95% confidence interval of the religiosity groups in all indicators of health and health behavior presented above. Additional covariates were the personal characteristics presented above, so that the religiosity effect is adjusted for other measured confounders. In order to allow for different effects by gender, in all the regressions, an interaction between gender and religiosity was included. However, it appeared in the final results (and discussed) only when it had a significant effect.

Results

With regard to how the subjects defined their level of religiosity, 58% classified themselves as secular, 28% as observant, 8% as religious, and 6% as ultra-Orthodox. Because of their relatively small numbers, the religious and the ultra-Orthodox people were combined together as “religious.” Consequently, in the analyses that follow, religiosity is measured by three categories: secular (1772 persons, 58%), observant (856, 28%), and religious (428, 14%).

Table 1 provides the variable means by religiosity groups and in total. The mean age of the population in the study was 46 years, and 46% were men. Half of the sample was of European-American origin, 36% of Asian-African origin, and 14% were Israeli born. These figures match the population statistics. Fifty-eight percent in the observant group were of Asian-African origin, while 60% in the secular group were of European-American origin. Two-thirds of the population was married; in the secular group that proportion was 61%. With regard to education, more than half of the population continued to post-high schools; however, in the observant group the proportion with primary education only was 23%. Finally, for the entire population, there were 0.93 persons per room. Religious people have relatively larger families and smaller dwellings.

The religiosity effect on health behavior

Table 2 presents the association between religiosity and several indicators of protective health behavior. Religious people (men and women) feel less stressed than observant and secular people.

Table 1. Means of the study variables

	Secular (n=1772, 58%)	Observant (n=856, 28%)	Religious (n=428, 14%)	Total (n=3056)
Age (yrs)	45	48	42	46
Gender				
Men	46	45	42	46
Women*	54	55	58	54
Ethnic origin				
Asia-Africa	24	58	39	36
Europe-America	60	34	40	50
Israel*	16	8	21	14
Marital status				
Married	61	71	80	66
Not-married*	39	29	20	34
Education				
Academic	38	19	27	31
Post-high	20	15	29	20
High	31	43	25	34
Primary*	11	23	19	15
Persons per room	0.85	0.94	1.21	0.93

* Base category in the multivariate analysis.

Table 2. Religiosity and health behavior*

	Secular	Observant			Religious		
	OR	OR	95%CI	OR	95%CI	OR	95%CI
Feeling tense	1	0.871	0.718	1.057	0.621	0.488	0.791
Does sport less than almost daily	1	0.884	0.731	1.071	0.854	0.667	1.094
Always wears hat / covers hair	1	1.272	1.038	1.556	2.723	2.125	3.491
Always wears long sleeves	1	1.142	0.848	1.539	6.783	5.103	9.017
Smokes (1+ cigarettes daily)	1	0.739	0.601	0.908	0.324	0.235	0.447
Among smokers: up to 20 cigs/day	1	1.004	0.665	1.515	1.895	0.835	4.298
Ever smoked	1	0.672	0.558	0.808	0.373	0.289	0.481
Body mass index ≥ 30	1	0.991	0.733	1.356	1.505	1.045	2.169

* Logistic regressions of the probability of “yes.” Other covariates include gender, age, education, number of people per room, ethnic origin, marital status.

Odds ratio (OR) in **bold** are significantly (5%) different than unity, CI = confidence interval.

Table 3. Religiosity and medical examinations*

	Secular	Observant			Religious		
	OR	OR	95%CI	OR	95%CI	OR	95%CI
Last blood pressure test more than a year ago	1	0.871	0.703	1.082	1.198	0.927	1.551
Last cholesterol test more than a year ago	1	0.923	0.753	1.131	1.191	0.916	1.547
Last breast clinical exam more than a year ago	1	1.331	1.025	1.728	2.193	1.535	3.133
Last mammography more than a year ago	1	1.362	0.991	1.866	1.963	1.234	3.121
Last visit to dentist within the last 6 months	1	1.055	0.877	1.269	0.842	0.664	1.068

* Logistic regressions of the probability of “yes.” Other covariates include gender, age, education, number of people per room, ethnic origin, marital status.

Odds ratio (OR) in **bold** are significantly (5%) different than unity. CI = confidence interval

While no religiosity gradient was found with regard to physical exercising, religious people protect themselves against the sun more than the secular do, they smoke less, but they are more likely to be overweight. Allowing for different gradients for men and women showed that while no differences in sport activities were found among men, religious women were 30% – and observant women 26% – less likely than secular women to exercise regularly. Smoking among religious women is very rare.

The religiosity effect on the use of medical checkups

Table 3 shows that while there were no differences in the frequency of cholesterol and blood pressure checkups and visits to the dentist between religious, observant and secular groups, religious and observant women tend to have fewer clinical breast examinations relative to secular women, and religious women undergo fewer mammography tests than observant and secular women.

Religiosity and eating habits

In general, the eating habits of religious people differ from those of secular people [Table 4]. The differences between the secular and observant groups are smaller, but whenever they exist, the religiosity gradient is full.

While we found no religiosity differences in the consumption of white cheese, 3% fat milk, and butter, religious people tend to consume less milk and yellow cheese than secular and observant

Table 4. Religiosity and eating habits^{1,2}

	Secular	Observant			Religious		
	OR	OR	95%CI		OR	95%CI	
Eggs once a week or more	1	1.638	1.331	2.017	1.734	1.317	2.283
Red meat sausages once a week or more	1	1.049	0.861	1.277	0.443	0.332	0.591
Red meat once a week or more	1	1.195	0.986	1.448	0.797	0.618	1.027
Chicken/turkey every day	1	0.827	0.682	1.002	0.614	0.474	0.795
Fish once a week or more	1	2.291	1.883	2.786	5.386	3.987	7.275
Fruits every day	1	1.125	0.891	1.421	1.021	0.761	1.371
Vegetables every day	1	0.911	0.683	1.214	0.993	0.678	1.454
Coffee every day	1	0.764	0.625	0.935	0.654	0.509	0.841
Soda drinks once a week or more	1	1.075	0.888	1.301	1.078	0.846	1.373
Margarine ever	1	0.919	0.766	1.104	0.678	0.533	0.862
Sugar (in food or drink) every day	1	1.019	0.844	1.231	0.845	0.664	1.075
Wholewheat bread once a week or more	1	0.877	0.726	1.059	0.891	0.697	1.138
Regular bread once a week or more	1	1.113	0.926	1.338	0.622	0.491	0.791
Butter ever	1	0.944	0.779	1.144	0.821	0.642	1.051
Yellow cheese once a week or more	1	1.047	0.871	1.259	0.453	0.355	0.578
1% fat milk every day	1	0.827	0.675	1.013	0.646	0.491	0.853
3% fat milk ever	1	1.154	0.957	1.392	1.183	0.928	1.509
White cheese ≥ 9% ever	1	1.155	0.952	1.401	0.856	0.666	1.101
White cheese ≤ 5% ever	1	1.119	0.911	1.374	0.969	0.749	1.253

* Logistic regressions of the probability of “yes”. Other covariates: gender, age, ethnic origin, marital status, education, number of people per room.

Odds ratio (OR) in **bold** are significantly (5%) different than unity, CI = confidence interval.

people. This means that while the observant and secular groups consume about the same amounts of dairy products, religious people consume less of these products. However, both religious and observant groups are heavier consumers of eggs than secular people.

While religious people consume less red meat sausages, chicken and turkey, they consume much more fish than do secular people. The same is true for observant people. The gradient in the consumption of fish was the steepest religiosity gradient found in eating habits. A full religiosity gradient was also found with relation to coffee drinking: religious people drink less coffee than the observant, who drink less than the secular group. In all other products, including the consumption of fruits and vegetables, sugar, whole and plain wheat breads, no difference was found.

Discussion

Health behavior and individual health responsibility in terms of prevention, early detection, follow-up and compliance play a major role in modern health promotion. Relating health behavior to religiosity, two contradictory factors may be expected. On the one hand, belief in divine determinism and justice, or other directives or norms may induce passivity and abdication of responsibility. Furthermore, dealing with bodily and earthly matters might be seen as inferior to spiritual matters and studies. Such an attitude might result in neglecting one’s health and in disprotecting behavior. For illustration, unpublished data on other topics from the present survey show that religious people were 30%

– and observant people 50% – more likely than secular individuals to declare that diseases are mainly a matter of uncontrollable factors (genetics, destiny, etc.) rather than being generally affected by the individual’s behavior. In other words, religious people might be less risk averse than secular individuals with respect to ill health and, consequently, might conduct a less protective behavior. A recent study [13] confirms that argument and notes that religious people are more inactive physically than their secular counterparts. On the other hand, religious people might have greater patience for future outcomes, and more motivation to give up unhealthy habits and behavior in order to maintain a healthy body, which will allow for a more intensive and longer spiritual life and search (*pikuah nefesh*, meaning to save a life).

The results show a mixed picture. Religiosity is clearly related to lower stress levels. Similar effects in terms of better mental health and lower hostility were reported previously [1,10]. The lower prevalence of melanoma among religious Israelis [14] might be directly related to their being better protected against the fierce Israeli sun by wearing a hat or covering their hair and wearing long sleeves. This is an unintended favorable result of the clothing attire, for reasons of modesty, of religious and ultra-Orthodox Jews. We could not find data indicating a possible relative

deficiency of vitamin D because of less sunlight exposure among religious people.

While no religiosity gradient was found in regular physical exercising among men, religious women exercise less than secular women. Among both men and women, religious people are more obese than the secular. This might represent an unintended unfavorable religiosity effect, where religious persons are less concerned about how they look and are less interested in losing weight. Hart and co-authors [15] assessed dietary behaviors and religiosity in the USA and found a positive association between religiosity and a diet low in fat. Kim et al. [16] observed that conservative Protestant men had higher body mass index than those reporting no religious affiliation. They attributed this to the lower rates of smoking among more religious individuals.

The most significant health behavioral difference was in smoking. The prevalence of never-smokers is much higher in the religious community than among the secular. Religious women rarely smoke. Such a religiosity difference was documented 20 years ago as well [4]. These differences can be clearly related to the mortality differentials in other studies reported above. Note that the difference does not originate from the parallel well-known smoking and mortality gap between persons with high and low education levels, since education level was held constant in our analysis.

While no religiosity gradient was found with relation to the frequency of blood pressure, cholesterol and dental checkups, religious women refrain from undergoing breast examinations and mammography. Interestingly, Van Ness and colleagues [17]

reported that whites in Connecticut (USA) who attended religious services frequently were about two and a half times more likely to undergo breast cancer screening than other whites. While the higher fertility of religious women provides some protection against breast cancer, recent preliminary epidemiological Israeli research indicates a higher case-fatality rate among religious women suffering from the disease (Dr. Sadeski, Gertner Institute, personal communication). This is attributed to late diagnoses and non-compliance with the treatment.

The common explanations for the lower rates of mammography and show-up for breast cancer treatment among Israeli religious women are first, heavy load of housework and second, the fear of lowered "expected value" of their unmarried daughters in the closed and limited religious marital market, because of the disclosed adverse family medical history. This might explain the lower reported prevalence of breast cancer and other (hereditary) diseases in religious families. An additional explanation might be the belief held by many that prayer can more readily cure disease that has not yet been diagnosed.

Although religious people suffer from obesity more than secular people, they might follow a healthier dietary regime. This was also indicated 20 years ago [4]. The main favorable differences are related to the laws of *kashrut*, the religious commandment to avoid the consumption of meat and dairy products concurrently or within a few hours of each other. As a result, religious people consume less meat and less dairy products and, instead, consume much more fish and fatty acid, which have known protective effects against coronary heart disease [18], stroke and cognitive dysfunction, than do secular people. The possible adverse effects of the apparent lower consumption of calcium have yet to be investigated.

Combining the above results with the previously shown longer life expectancy of the religious community, it seems that religious people do conduct a healthier lifestyle, in terms of lower stress, lower rate of ever smoking, and healthier eating habits. Religious women, however, might be at a greater risk than secular women as a result of multiple births that may lead to overweight, heavier household chores and exhaustion, less involvement in religious practice and studies, which are believed to be one of the reasons for the protective effect of religiosity [7], and taking fewer preventive measures against breast cancer. Many of them also suffer from overweight, partially due to their lack of sport activity.

Several biases might have resulted from the procedure used for collecting data. As in all telephone surveys, those with little time are less likely to be interviewed. An under-representation of highly educated and wealthier persons might result. Another source of bias might be that sick and frail persons in community dwellings are more likely to stop the interview or to refuse to answer at all. The resulting sample might thus be healthier than the population. The use of a cross-sectional survey to examine analytical relationships is usually subject to problems of selective survival and the use of prevalence data, without explicitly accounting for individual fixed effects. If religious people live longer and have lower case-fatality rates, it is expected that they will have a higher prevalence of chronic conditions. This was not

reflected in the data, and if not a result of low power, it might indicate that, possibly, religious people have lower incidence rates of morbidity. We do not see, however, any reason for a differential response rate between religious and secular people.

Acknowledgments. We thank Dr. Elliot Berry, Dr. Yechiel Friedlander and an anonymous referee for their comments on earlier drafts of the paper. Amalia Habib-Messika and Maya Ben-Lassan provided very useful assistance with the analysis of the data.

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Correspondence: Dr. A. Shmueli, Dept. of Health Management, Hebrew University School of Public Health, P.O. Box 12272, Jerusalem 91120, Israel.

Phone: (972-2) 675-8514, Fax: (972-2) 643-5083

email: ashmueli@md2.huji.ac.il