

LIFESTYLE BEHAVIORS OF ONE BACCALAUREATE NURSING CLASS: A PILOT STUDY

Mary MacDonald and Robert Faulkner

Diseases related to lifestyle are a major cause of morbidity and mortality in Canada. The association between many health problems and behaviours such as smoking, alcohol consumption and poor nutritional habits leading to obesity is well-documented (Angel, 1978; Breslow, 1980; Cohen, 1979; Huebert, Feinleib, McNamara & Castelli, 1983; Schmidt, 1977; & Wynder & Hoffman, 1979). Cigarette smoking is a major causal factor in the occurrence of chronic illnesses such as cardiovascular disease, respiratory disease and cancer and is the "major preventable cause of premature death in Canada" (Semenciw, 1987, p.75). Obesity is associated with chronic diseases such as atherosclerosis, diabetes, hypertension and even breast cancer (Stockwell, Periera, White & Cottreau, 1985). Unlike the above factors, physical activity is one lifestyle variable that has been shown to have many health benefits (Powell, Thompson, Caspersen & Kendrick, 1987; & Wiley & Camacho, 1980) and, thus, promotes well-being.

Duncan and Gold (1986) state that "health promotion contributes to the growth, enlargement or excellence of health." (p.48) Nurses have a responsibility for helping consumers develop positive attitudes and strategies of health promotion for well-being. In order to meet this responsibility nurses must learn and practise preventative care as students. Olivieri and Ouellette (1986) and Gupta, McMahon and Sandhu (1986) emphasize that "faculty in schools of nursing should assume active leadership roles on a personal and a professional level, to promote the 'high level wellness' of the campus community, especially of the undergraduate students" (p.29). Carlin (1982) also advocates that nurses be role models of what they teach.

Although lifestyle and health education programs are recognized as important in nursing education, research evaluating the effectiveness of these programs on student behaviours is scarce. A Medline search for articles dealing with nursing students and health promotion behaviours, physical fitness

Mary B. MacDonald, B.S.N., M.C.Ed. is Associate Professor in the College of Nursing at the College of Nursing. Robert A. Faulkner, B.S.P.E., M.Sc., Ph.D., is Assistant Professor in the College of Physical Education. Both are at the University of Saskatchewan.

and smoking elicited a limited number of studies. One study by Rausch, Zimmerman, Hopp and Lee (1987) determined that the overall smoking rate for student nurses in diploma, associate degree and undergraduate nursing programs was 26%. This is consistent with national smoking rates for females.

A study conducted by Richards (1985) examined whether the attitude of 78 nursing students towards physical fitness correlated with participation in physical exercise and with actual fitness levels. He concluded that attitude toward physical fitness was not a good indicator of commitment and actual participation in physical exercise. Another study conducted by Hadubiak (1986) involved administering a lifestyle questionnaire to a group of 59 nursing students and a group of 100 finance students. The nursing students scored significantly better on the subscales exercise, nutrition, self-care, vehicle safety, drug usage and occupational satisfaction. These results support the hypothesis that increased levels of health knowledge lead to healthier lifestyles.

The purpose of the present study was to assess changes in specific lifestyle behaviours and physical parameters over the course of one four-year baccalaureate nursing program. Specific variables were selected because comparisons to national data such as the *Canada Fitness Survey* (1981) and *The Health of Canadians: Report of the Canadian Health Survey* (1983) are readily available. This particular program has one unit in the first year nursing course that covers the concept of health and includes lifestyle education. Concepts taught in first year are then integrated into content for the remaining three years of the program.

Methods

Subjects

First year nursing students were evaluated on their fitness and lifestyle behaviours in September 1983 and 1984, as part of their first year nursing course. Fifty-four of those students tested were enrolled in the final year of the baccalaureate program for the 1987-88 term. Of these, 29 (two from 1983 and 27 from 1984) volunteered to be reevaluated using the same measurement protocols as in the pre-testing so as to provide "matched" data.

In order to assess whether or not nursing students had healthier lifestyle behaviours than other fourth year university students, the lifestyle and fitness characteristics of fourth year female nurses were compared to those of a volunteer sample (n=16) of fourth year female education students. Because the post-test evaluations were completely voluntary, it is likely that the final sample represents a healthier and more fit group than would be expected from a general population of university students.

Participation in testing was on a completely voluntary basis. Students were assured of anonymity and that participation or nonparticipation would in no way affect their course marks. Neither of the investigators was in any way associated with teaching or assigning of marks for the fourth year courses.

Measurement

The YMCA *Lifestyle Inventory and Fitness Evaluation Program* (LIFE) was developed in 1975. It is designed to evaluate the physical fitness and lifestyle habits of participants. The LIFE program has been described by Bailey, Mirwald, Faulkner, Fairbairn and Owen (1982). The lifestyle questionnaire utilized is a modification of the *Health Hazard Appraisal System* (Robbins & Hall, 1970) and includes 19 questions concerning various lifestyle and health characteristics such as family history of heart disease, cancer and diabetes and smoking and alcohol consumption practices. The *Health Hazard Appraisal* has been used extensively by clinicians and health educators. The following lifestyle parameters from the LIFE program were assessed: alcohol consumption, seat belt use, physical activity, smoking history, pap smear testing and breast self-examination.

Alcohol consumption consisted of three categories: nondrinker, light drinker (1-2 drinks per week) and moderate drinker (3-6 drinks per week). Seatbelt use included two categories: worn 25-75% of the time and worn 75-100% of the time. Physical activity categories were: infrequent (some but not on a regular basis), regular (2-3 times per week) and frequent (4-5 sessions per week). Smoking consisted of three categories: nonsmoker (or not smoked for past 10 years), quitter (within past 10 years) and smoker. Categories for the pap smear test were either "had" or, "not had" within the past five years, while the categories for breast self-examination were examine regularly and do not examine. Physical parameters measured included: standing height recorded to the nearest 1mm, weight recorded to the nearest 0.1kg, skinfold measures taken with Harpenden skinfold calipers at biceps, triceps, subscapular and suprailiac sites; and, predicted maximum oxygen consumption (MVO_2).

All anthropometric measures were taken by trained personnel according to the procedures outlined in the Canadian Standardized Test of Fitness Operation Manual (Government of Canada, 1986). Maximum oxygen consumption was predicted according to the procedure of Astrand and Ryhming (1954). The protocol is well-documented and has had widespread use (Bailey, Shephard, Mirwald & McBride, 1974; Shephard, 1977). Prediction of MVO_2 was made from the Astrand Ryhming monogram using an appropriate modification of the program suggested by Shephard (1970). All subjects completed a PAR Q preactivity questionnaire prior to testing.

Data Analysis

Changes in categorical lifestyle variables were assessed using a chi-square test. Comparison of these variables for the nursing students to those for the education students was done using a chi-square test of independence. Changes in MVO₂, body weight, forced vital capacity (FV) and the sum of five skinfolds (SSF) were assessed using a MANOVA for repeated measures. Comparisons of the nursing student post-values to those of the education students were also done using a MANOVA procedure.

Results

The physical characteristics of the nursing subjects for both pre- and post-testing are shown in Table 1. As displayed, there was a significant decline ($p<.05$) in SSF from 71.2 to 62.9mm. MVO₂ significantly increased ($p<.01$) from a pretest value of 33.3 to 36.9 ml/kg/minute. There was no change in FV or in body weight.

Table 1

Comparison of Nursing Student Post-test to Pre-test Physical Fitness Results (n=29)

Category	Mean		2-Tail Probability
	Pre	Post	
Weight	61.9	61.3	0.513
Sum of skinfolds	71.2	62.9	0.033
Maximum O ₂ consumption	33.3	36.9	0.009
Forced vital capacity	3.6	3.7	0.178

Comparison of the lifestyle variables between pre- and post-testing for the 29 nursing students (27 female, 2 male) are shown in Figure 1. Seat belt use, pap smear tests and breast self-examination improved significantly. Seatbelt use improved from 69% using seatbelts 75-100% of the time at the pre-test to everyone using seatbelts most of the time at the post-test; 74.1% of the females had a pap smear test within the past five years in the post-test compared to only 33.3% in the pre-test; 63% regularly performed breast self-examination in the post-test compared to 40.7% in the pre-test. There were no heavy drinkers and the student who was a moderate drinker in the first year of the program switched to being a light drinker by the final year. Of twelve students who had regular exercise in the pre-testing, two increased to

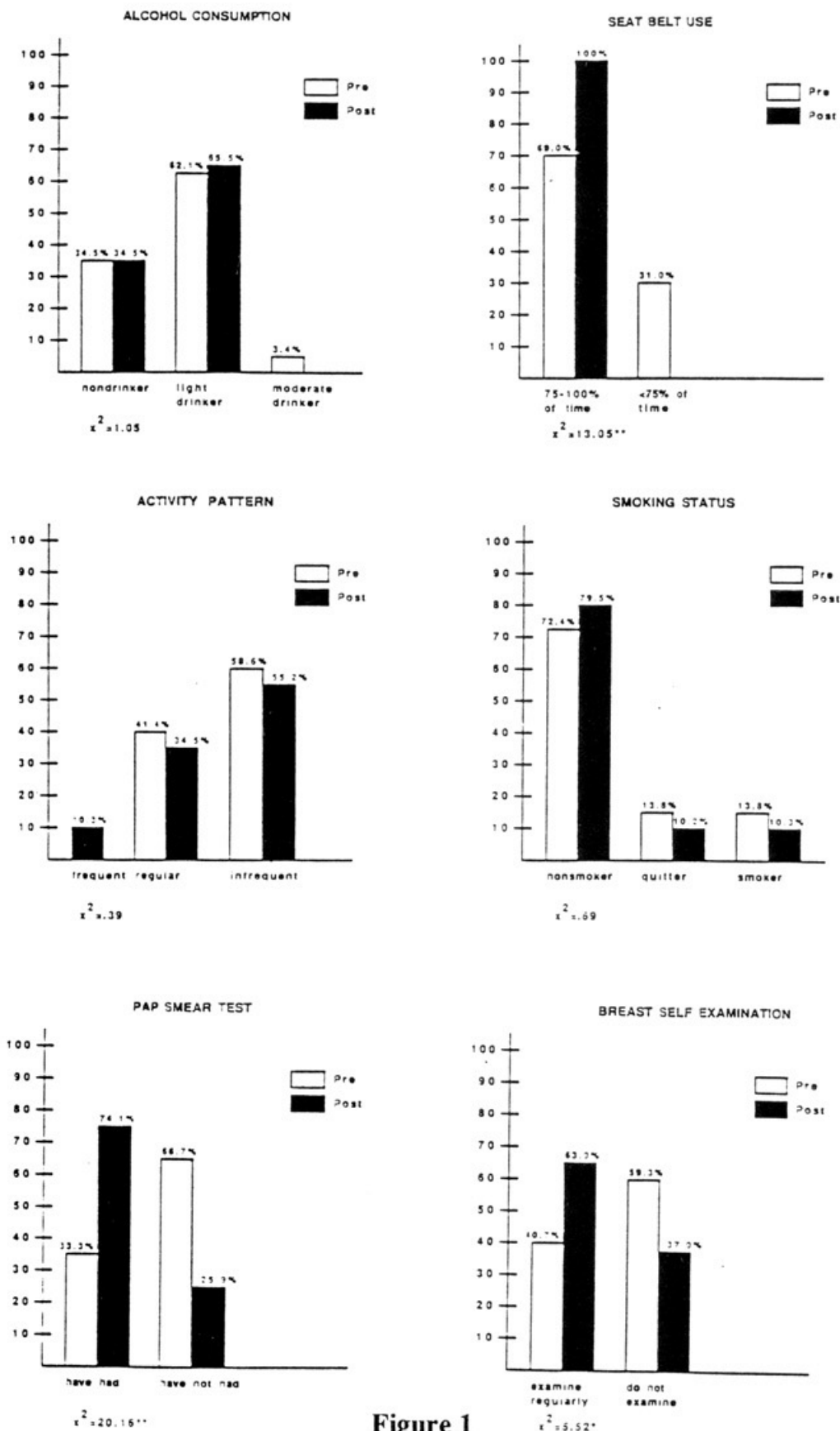


Figure 1

frequent exercise while five decreased activity to infrequent. Of those 17 who had infrequent exercise on pre-testing, one increased to frequent exercise while five increased to regular activity. No one started smoking during the four year-program; 79.5% were nonsmokers, 10.2% had quit smoking and 10.3% remained smokers.

Results of the comparison of the fourth-year nursing data (n=27) to the fourth-year education student data (n=16) are shown in Table 2 and Figure 2. As shown, there were no significant differences between the anthropometric measures. In terms of the lifestyle factors, the nursing students were significantly more active ($p<.05$) than the education students. Most of the students in both groups reported infrequent exercise (55.2% of the nurses, 81.2% of the control), but, 44.4% of the nurses, compared to 18.8% of the control group, obtained regular or very frequent exercise. More nursing students were nondrinkers than the control group of education students (33.3% compared to 31.2%). Seatbelts were used 75-100% of the time by both groups. Of the student nurses, 92.6% were nonsmokers compared to 93.8% of the education students. More of the education students (81.3% compared to 74.1%) had a pap test within the past five years. The same is true of regular breast self-examination (68.8% compared to 63%).

Table 2

Physical Fitness Post-test Results: Female nursing students compared to female education students

Category	Mean	
	Nursing	Education
Maximum O ₂ consumption	35.97	37.91
Weight	60.94	60.35
Sum of skinfolds	65.24	61.61
Forced vital capacity	3.68	4.02

Note: Analysis of variance showed no significant difference between the two groups on any of the fitness variables.

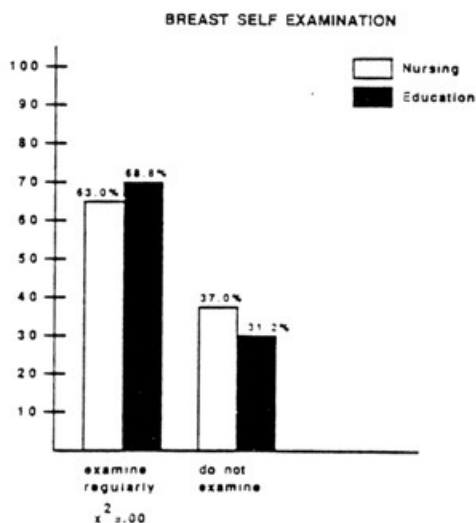
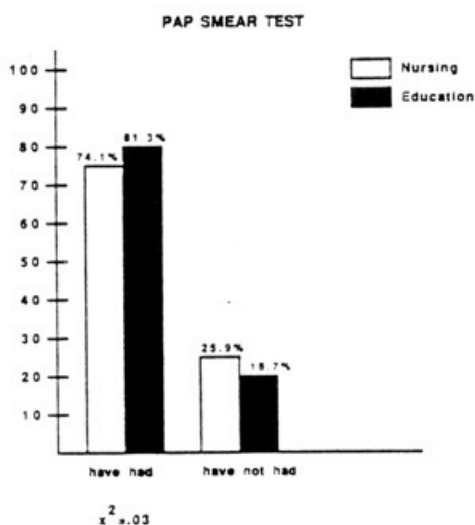
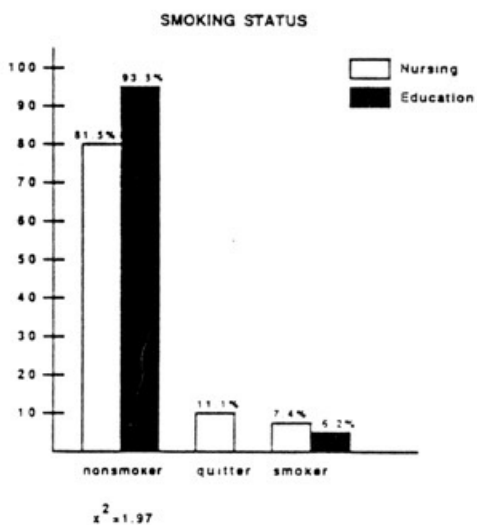
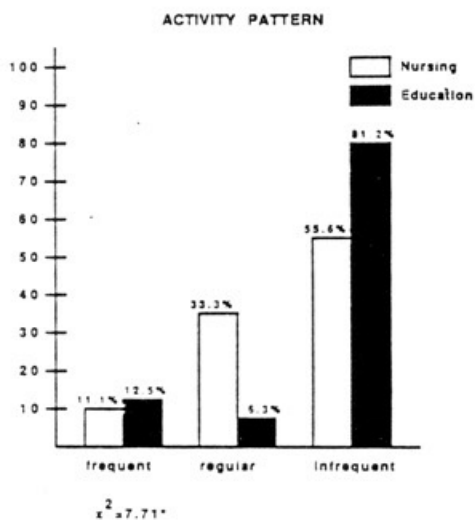
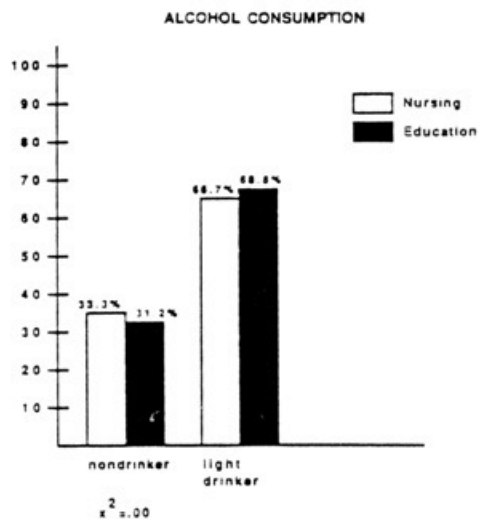


Figure 2

Discussion

Of the physiological variables tested, SSF and MVO_2 changed significantly in the nursing students ($p < .05$). A possible explanation for the decrease in the sum of the five skinfolds and the increase in maximum oxygen consumption could be that the students became more active because of an increase in clinical courses and that there was more nutritious food consumption. The decrease in body weight and SSF would explain the increase in relative MVO_2 .

Comparison of the nursing student results to other Canadian data is enlightening. In terms of activity, the nursing students were less active than comparative studies of Canadian females as shown in the *Canada Fitness Survey* (CFS) (Government of Canada, 1983), the *Canadian Health Survey* (CHS) (Government of Canada, 1981) and the Canadian YMCA-LIFE Program (YMCA-LIFE) (Bailey et al. 1982). The MVO_2 , although lower than the desirable level for females age 20-29, was the same as the Canadian female average in the YMCA-LIFE. It may be reasoned that low physical activity is a local phenomenon as the physical education center is a long distance away and the students were too busy on wards and in classes to exercise. However, these findings are consistent with those of other Canadian studies. It has been shown that nursing students do value exercise but do not follow through with a commitment to regular physical exercise (Richards, 1985; & Sabrina-McVety, Booth, Orban & Richards, 1988). In light of the data available, nursing educators should promote a commitment to regular exercise. Future studies could involve the implementation of an innovative lifestyle education program to test for changes in physical fitness and other lifestyle variables.

Seat belt use increased significantly ($p < .01$) over the course of the four-year program as did pap smear tests ($p < .01$) and breast self-examination ($p < .05$). More students were nonsmokers at the completion of the program. Compared to the Canadian female population for this age group, fewer nursing students smoked and consumed alcohol. This is noteworthy and indicates that the message of health promotion is getting across for these particular behaviours. It is, however, discouraging that pap tests and breast self-examination were not performed on a regular basis by all the female students. It is also discouraging that the nursing students were well below the Canadian average in respect to regular exercise. More emphasis on healthy lifestyle behaviours may be part of the answer. However, there is a gap between valuing a healthy lifestyle and commitment to that lifestyle. Research needs to be conducted to assess the relationship between the frequency of specific lifestyle variables and the Health Belief Model or Health Promotion Model. The Exercise Benefits/Barriers Scale (Sechrist, Walker & Pender, 1987) and other instruments could be utilized to examine the role of

cognition and perception as determinants of specific fitness and lifestyle behaviours and changes in those behaviours. Thus, multiple causality of health behaviour should be investigated.

The nursing students were significantly more active than the education students. While this is encouraging, it must be emphasized that both groups reported well below the average amount of exercise for Canadian females in the same age group. It was anticipated that a bias might exist in that those more physically-active students in both groups might volunteer to be tested. Based on the results, such a bias does not appear to exist. If a bias does exist, then those students who did not participate obtained even less physical activity. This is alarming.

While the results must be interpreted with caution because of the small sample size, it is noteworthy that more of the education students had a pap smear test within the past five years and performed regular breast self-examinations than did nursing students. This is discouraging in that student nurses are taught that these procedures are a necessary part of health monitoring and will be teaching clients health promotion and illness prevention strategies. How can the gap between knowledge and behaviour be bridged?

Conclusion

It must be emphasized that this was a pilot study with a small sample size and that there was not a control group for pre-testing as the LIFE program was administered only as an educational tool and not a research study. Thus, it is not known whether findings indicating no differences are a result of the small sample size or that, in fact, there were no significant differences. Future research should address this issue of power and design.

It is assumed that knowledge will result in changes in behaviour. However, research testing the link between knowledge and behaviour is limited. Pender (1987) developed the Health Promotion Model to explain motivation for health promotion behaviours. She continues, along with colleagues, to conduct research to test the applicability of the model (Sechrist, Walker & Pender, 1987; Walker, Sechrist & Pender, 1987). Future directions for nursing education should be based on research that (a) monitors different types of approaches to lifestyle education, and (b) examines what motivates individuals to commitment to health promotion behaviours. The authors are currently conducting research to examine the role of cognition and perception, including locus of control, as determinants of specific lifestyle behaviours.

The trends evidenced in this pilot study are interesting and do identify important issues for nursing education. As health care professionals, we must

ask several questions. Is there enough emphasis on lifestyle education in our programs? What can be done to promote commitment to health promotion strategies, not only among students but among those of us who are practicing nurses? Can nurses be effective advocates of health promotion strategies if they are not role models of those strategies? Educators need these answers before effective programs for health promotion education can be developed.

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RÉSUMÉ

Style de vie d'une classe d'élèves en nursing au niveau du baccalauréat - Projet pilote

Ce projet pilote s'est consacré à l'étude des variables particulières au bien-être physique et au style de vie d'une classe d'élèves en nursing au niveau du baccalauréat. Les mesures de la 1^{ère} année furent comparées à celles de la 4^e. Parmi les variables du style de vie, l'usage de la ceinture de sécurité, les tests pap et l'auto-examen des seins ont connu une forte augmentation au cours du programme, qui dure quatre ans. Il y a eu aussi une augmentation significative du niveau d'oxygène consommé et une diminution significative du total des cinq plis de peau.

Les données des étudiantes en nursing de 4^e furent comparées à celles d'un groupe contrôle d'étudiantes en éducation. Les étudiantes en nursing se sont prouvées beaucoup plus actives que celles en éducation.