Chapter 2

Review of Related Literature
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The research scholar has gone through related literature available, which are relevant to the present study. The relevant studies found through various sources, which the research scholar has come across, are enumerated below.

Mahajan AS and Reddy KS (1999) studied the effect of yogic lifestyle on the lipid status in angina patients and normal subjects with risk factors of coronary artery disease. The parameters included the body weight, estimation of serum cholesterol, triglycerides, HDL, LDL and cholesterol-HDL ratio. A base line evaluation was done and then the angina patients and risk factors subjects were randomly assigned as control (n=41) and intervention (yoga) group (n=52). Lifestyle advice was given to both the groups. An integrated course of yoga training was given for four days followed by practice at home. Serial evaluation of both the groups was done after fourth tenth and fourteenth weeks. Dyslipidemia was constant feature in all cases. An inconsistent pattern of change was observed in the control group of angina (n=18) and risk factor subjects (n=23). The subject practicing yoga showed a regular decrease in all lipid parameters except HDL. The effect started from four weeks and
lasted for 14 weeks. Thus, the effect of yogic lifestyle on some of modifiable risk factors could probably explain the preventive and therapeutic beneficial effect observed in coronary artery disease.

Karambelkar, P.V. et.al, (1977) observed a reduction of mean cholesterol level in 22 males and 10 females at the end of three weeks training in yogic physical culture. The reduction was not significant in the case of females. No significant changes were observed in weight, body fat percentage and skin fold.

Manchanda Sc. et.al, (2000) studied the effect of yoga on coronary artery disease (CAD). In this prospective, Controlled clinical trail, 42 men with angiographically proven CAD were randomized to control (n=21) or yoga (n=21) intervention and were followed for 1 year. The active group was treated with a user-friendly programme consisting of yoga control risk factors, diet control and moderate aerobic exercise. The control group was managed by conventional method (risk factors control and American heart Association step 1 diet). After 1 year, the yoga group showed significant reduction in number of anginal episodes per week, improved exercise capacity and decrease in body weight. Serum total cholesterol, LDL cholesterol and triglyceride level, also showed greater reductions in comparison with the control group.
Revascularization procedures (coronary angioplasty or bypass surgery) were less frequently required in the yoga group (one versus eight patients, RR, 5.45, P=0.01) coronary angioplasty repeated at one year showed that significantly more lesions regressed (20% versus 2%) and less lesions progressed (5% versus 37%) in the yoga group (chi-square 24.9, P<0.0001) Compliance to the total programme was excellent No side effects were reported Thus at the end of this study it was concluded that yogic lifestyle intervention retards progression and increase regression of coronary atherosclerosis in patients with severe CAD It also improves symptomatic status, functional class and risk factors profile

Wood, P D et al, (1979) conducted the study to determine the effect of exercise on plasma high-density lipoproteins, and other Lipids In this study the subjects were active men, aged 35-49 years, who averaged 39 miles of running per week The non-runners who served as the control group were of the same age span but did not exercise on a regular basis Whereby it was observed that Chronic exercise training causes decrease in total blood cholesterol, triglycerides and low-density lipoprotein (LDL cholesterol) concentrations, and an increase in high-density lipoprotein (HDL
cholesterol) concentration in both men and women. While, there was no significant reduction of LDL in control group.

Wannamethee SG. et.al, (2000) studied the relations between physical activity, types of physical activity and all cause mortality in men with established coronary heart disease CHD. Where by in 1992, 12 to 14 years after the initial screening (Q1) of 7735 men 40 to 59 years of age from general practices in 24 British towns, 5934 (91% of available survivors mean age 63 years). Provided further information on physical activity (Q92) and were followed up for 5 years; 963 had a physician's diagnosis of CHD (myocardial infraction or angina). After exclusions, there were 772 men with established CHD, 131 of whom died of all causes. The lowest risks for all- cause, and cardiovascular mortality were seen in light and moderate activity groups (adjusted relative risk compared with inactive occasionally active: light, 0.42 (0.25, 0.71); moderate, 0.47 (0.24,0.92) and moderately vigorous/vigorous 0.63 (0.39,1.03). Recreational activity of >/= 4hours per weekend, moderate or heavy gardening, and regular walking (>40 min /d). Were all associated with a significant reduction in all cause mortality. Non-sporting activity was more beneficial than sporting activities. Men sedentary at Q1 who began at least light activity by Q92 showed lower mortality rates on follow-up
than those who remained sedentary (relative risk 0.58, 95% CI 0.33 to 1.03 P = 0.06). Finally it was concluded that, light or moderate activity in men with established CHD is associated with a significantly lower risk of all cause mortality. Regular walking and moderate or heavy gardening were sufficient to achieve this benefit.

MC Common MR and Israel RG (1994) conducted a study on the effect of exercise training on absolute and relative measurement of regional adiposity, showed that the training programme significantly increased HDL and decreased triglyceride and total cholesterol minus HDL. The training period was (30-45 min /days / weeks) of 14 week.

Jennings GL (1995), observed that there are direct effects of regular exercise on blood pressure and lipid profiles. The changes vary according to the level and duration of increased physical activity.

Blackwell.B.et. al, (1976) conducted a study to determine the effect of transcendental meditation on hypertension. Seven selected hypertensive patients were stabilized on drugs at a research clinic. Subjects learned transcendental meditation (T.M.), were seen weekly, and took their own blood pressure several times daily. After 12
weeks of T.M. six subjects showed psychological changes and reduced anxiety scores. Six subjects also showed significant reductions in home and four in clinic blood pressures. Six month later four subjects continued to derive psychological benefit and two showed significant blood pressure reductions attributable to T.M. at home and clinic.

Choquette, G, et.al, (1973) observed in the their study that the blood pressure at rest as well as during exercise was reduced to normal, following 6 months of exercise training of the subjects, who were considered borderline hypertensives.

K.S. Joshi (1978) conducted a study to determine the effect of pranadharana on 25 patients of hypertension and 18 patients of insomnia. The patients were asked to apply the mind to the breathing process, making it smooth, rhythmic and effortless. While breathing in and out they were asked to be aware of the sound 'aum' just feeling it without uttering the word. No other mantra or japa was introduced. Each such session of paranadharana lasted nearly half an hour every day for seven consecutive days. Statistical analysis of pre and post experiment data revealed that respiration per minute, systolic blood pressure and pulse rate had been significantly reduced after the treatment by meditation, while PGR had shown a significant increase.
The brain waves showed a significant decrease in frequency and amplitude. The number of sleep hours had significantly increased.

Murugesan R., et.al, (2000) conducted a study to determine the effect of selected yogic practices on the management of hypertension. Thirty-three hypertensives, aged 35 to 65 years were examined with four variables including systolic and diastolic blood pressure, pulse rate and body weight. The subjects were randomly assigned to three groups: a yoga group, a group who received medical treatment by the physician of the hospital and a control group. Yoga was offered in the morning and in the evening with 1 hr/session for 11-weeks. Medical treatment comprised drug intake every day for the experimental period. The result of pre-post test revealed that both the treatment stimuli (i.e. yoga and drug) were effective in controlling the measures of hypertension.

Patel, C. et.al, (1975) conducted a study to determine the effect of yoga and bio-feed back on hypertension. 34 patients were assigned at random either to six weeks of yoga methods with biofeedback or to general relaxation. Both groups showed a reduction in blood pressure, although the decrease was significantly greater for the yoga group. The control group was then trained in yoga relaxation and their blood pressure fell to that of the other group (now used as control).
Desai, B.P (1983) observed a significant reduction in serum lipase activity of diabetes patients at the end of yogic treatment of seven weeks.

Rich Edwards J.W. et. al. (1999) studied the effect of walking and other vigorous physical activity on type 2 diabetes in woman. During 8 years of follow up (534,928 person - years), where 1419 incident cases of types 2 diabetes were documented. After adjusting for age, smoking, alcohol use, history of hypertension, history of high cholesterol level and other covariates, the relative risks (RRs) of developing type 2 diabetes across quintiles of physical activity (least to most) were 1.0, 0.77, 0.75, 0.62 and 0.54 (P for trend <.001); after adjusting for body mass index (BMI), RRs were 1.0, 0.84, 0.87, 0.77 and 0.74 (P for trend = .002). Among women who did not perform vigorous activity, multivariate RRs of type 2 diabetes across quintiles of MET score for walking were 1.0, 0.91, 0.73, 0.69, and 0.58 (P for trend <. 001). After adjusting for BMI, the trend remained statistically, significant (RRs were 1.0, 0.95, 0.80,0.81, 0.74, P for trend = 0.01). Faster usual walking pace was independently associated with decreased risk. Equivalent energy expenditures from walking and vigorous activity resulted in comparable magnitudes of risk reduction. Thus it was concluded that greater physical activity
level is associated with substantial reduction in risk of type 2 diabetes, including physical activity of moderate intensity and duration.

Wannamethee S.G. et al, (2000) conducted a study to examine the role of non-fasting serum insulin level and components of the insulin resistance syndrome in the relationship between physical activity and the incidence of coronary heart disease and type 2 diabetes. It was a prospective study of 5159 men aged 40 to 59 years with no history of coronary heart disease, type 2 diabetes or stroke drawn from general practices in 18 British towns. During an average follow-up period of 16.8 years, there were 616 cases of major coronary heart disease events (Fatal and nonfatal) and 196 incident cases of type 2 diabetes. After adjustment for potential confounders (Lifestyle characteristics and pre-existing disease), results showed that physical activity was inversely related to coronary heart disease rates, with the lowest rates in the men undertaking moderate physical activity and with no further benefit thereafter. For type 2 diabetes, risk decreased progressively with increasing levels of physical activity. Physical activity was associated with hyperuricemia, diastolic blood pressure and high-density lipoprotein, cholesterol level, and with gama-glutamyltransferase level, a possible marker of
hepatic insulin resistance. Adjustment for insulin and associated factors made little difference to the relationship between physical activity and risk of coronary heart disease. By contrast, these factors together with gamma-glutamyltransferase level appear to explain a large proportion of the reduction in risk of type-2 diabetes associated with physical activity. In the end it was concluded that the relationship between physical activity and type-2 diabetes appears to be mediated by serum true insulin level and component of the insulin resistance syndrome. However, these factors do not appear to explain the inverse relationship between physical activity and coronary heart disease.

Jain SC et.al, (1993) Investigated the changes in blood glucose and glucose tolerance by oral glucose tolerance test (OGTT) after 40 days of yogic therapy in 149 non insulin-dependent diabetics (NIDDM). The response to yoga in these subjects was categorized according to a severity scale index (SST) based on area index total (AIT) under OGTT curve. One hundred and four patients showed a fair to good response to yoga therapy. There was a significant reduction in hyperglycemia and AIT with decrease in oral hypoglycemia and AIT with decrease in oral hypoglycemic drugs required for maintenance of normoglycemia. It was concluded that
yoga, a simple and economical therapy, could be considered a beneficial adjustment for NIDDM patients.

Cheng. Y. et.al, (2000) conducted a study to investigate the role of physical activity on the incidence of peptic ulcers disease. Although Helicobacter pylori has been identified as a major cause of chronic gastritis, not all infected patients develop ulcers, suggesting that other factors such as lifestyle may be critical to the development of ulcer disease. The participants were men (n=8,529) and women (n=2,884) who attended the cooper Institute for Aerobics Research Dallas, Texas, between 1970 and 1990. The presence of gastric or duodenal ulcer disease diagnosed by a physician was determined from a mail survey in 1990. Participants were classified into 3 physical activity groups, according to information provided at the baseline clinic visit (before 1990): active, those who walked or ran 10 miles or more a week; moderately active, those who walked for less than 10 miles a week or did another regular activity; and the referent group consisting of those who reported no regular physical activity. Results: with the use of gender-specific proportional hazards regression models, that could be adjusted for age, smoking, alcohol use, body mass index, and self-reported tension. active men had a significantly reduced risk for duodenal ulcers (relative hazards
[95% confidence interval] for the active group, 0.38 [0.15-0.94], and 0.54 [0.30-0.96] for moderately active group). No association was found between physical activity and gastric ulcers for men or for either type of ulcer for women. Thus it was concluded that physical activity may provide a non-pharmacologic method of reducing the incidence of duodenal ulcers among men.

Gharote, M.L. (1971) studied the effect of air swallowing on the gastric acidity. Decrease in free, combined and total acidity was found after air swallowing in 3 subjects at 0, 1/2 and 1 hour. However, the initial values showed the subjects to be hyperacidic.

A 6 month study with crossover at 3 months was designed by T. Dale (1979) to evaluate the possible beneficial effects of transcendental meditation upon peptic ulcer, 21 patients kept daily diaries of symptoms and medications and answered questionnaires at the end of the study 6 months later, other measurements including physician evaluation endoscopic testing. The results indicated that transcendental meditation is a useful adjunct in treating peptic ulcer.

Desai, B.P. and Bhole, M.V.(1982) conducted a study to determine the effect of yogic treatment on gastric acidity. Gastric acidity was found to decrease in hyperacidic patients after six weeks
of yogic treatment and more number of patients were seen to come in the normal range.

Muller popkes and Hajak (1996) conducted a study to determine the effect of psychotherapy and progressive relaxation technique on insomnia. 25 patients were treated in 12 individual session either with IPT-1 or with progressive relaxation technique. Results shows that patients from both the groups showed significant improvement of total sleep time, sleep efficiency and wake after sleep onset.

Jacobs G.D. et al. (1993) Conducted a study to determine the effect of multi-factor behaviour intervention consisting of stimulus control and relaxation-response training (n=10) compared to stimulus control alone (n=10) for sleep-onset insomnia. Only the multi-factor subjects mean post-test sleep latency fell within the good sleeper range. They also exhibited a 77% improvement on mean sleep-onset latency compared to the stimulus control group (63%). Thus, a multi-factor intervention may be more effective than stimulus control alone for treatment of sleep-onset insomnia.

Kocher, H.C.(1976) carried out a study to determine the effect of yogic practices on mental fatigue. He found that there was
significant improvement in overall performance of the mental work, in 32 subject after 3 week of training in yogic physical culture.

Kocher, H.C. and Pratap, V. (1971) observed significant reduction in total neurotic trend in 39 males and 9 females at the end of 3 week of training in yoga.

Bera, Gore and OAK. (1998) Compared the recovery from stress induced physiological stress in Shavasana (a yogic relaxation posture) and two other postures (resting in chair and resting supine posture). 21 males and 6 females (21-30 yrs) were allowed to take rest in one of the above posture immediately after completing a scheduled treadmill running. The recovery was assessed in term of heart rate (HR) and blood pressure (BP) HR and BP were measured before and every two minute after treadmill running until they returned to initial level. The results revealed that effect of stress was reversed significantly in shorter time in shavasana, than compared to the resting posture in chair and in a supine posture.

Sahasi.G, et.al (1989) Evaluated the efficacy of selected yogic practices (group1, N=38) as compared with drug (diazepam) therapy (group2, N=53) in anxiety-neurotic outpatients (aged 18-47 years). Subjects were administered a battery of tests, pre-and post-treatment.
Data obtained indicated a significant rate of improvement in group 1 Ss. who completed the prescribed length (5 days/week for 3 months) of yoga practices as compared with group 2 Ss. At least 7% of group Ss were reported to be completely asymptomatic as compared with none of the group 2 Ss.