Chapter-2

REVIEW OF RELATED LITERATURE
2.1 Introduction

Polit and Beck (2012) defines literature review as a critical summary of research on a topic of interest, often prepared to put a research problem in context. This is an essential first step to interpret and understand the research problem by locating it within the body of knowledge on the research topic. It is helpful in understanding the research approach, methodology, tools and the type of statistical analysis for the selected research problem. Review of literature for the current study is organised under the following headings:-

1. A theoretical overview of the laughter yoga.

2. Studies on effect of laughter yoga on psycho physiological variables among the elderly and other population groups.

2.2 The History, Philosophy and Theoretical overview of Laughter Yoga.

Laughter is an essential phenomenon of human life which is directly linked to happiness. Smiling in response to pleasant physical conditions occur in early development itself. By the time the child is 4 months old laughter is present as a motor reflex. By the age of eighteen months the child smiles once every six minutes, and by four years of age the rate increases to one smile every one and one-third minutes. The individual differences in the rate of both laughing and smiling become greater as the children grow older. The instinctual developments of smiling and laughing occurs very early in life, itself is suggestive of its high level of importance.

Extensive research all over the world for the past two decades has shown that laughter has a positive effect on various systems of the body. Modern society is
under the curse of several diseases more than 70% of which are stress related such as high blood pressure, heart disease, anxiety, depression, frequent cough and cold, peptic ulcers, insomnia, allergies, asthma, diabetes, arthritis, menstrual difficulties, tension headaches and cancers. The research on laughter shows its effects on unwinding the negative effects of stress, which is the catalyst of almost all health problems (Kataria, 2011).

Laughter is having an impact profound on mind and body. It strengthens the immune system and thus prevents sickness and aids in the healing process by reducing stress. Thus it is a best remedy for mind-body wellness.

In 1979 celebrated American writer Norman Cousins published his book ‘Anatomy of an Illness’ in which he has explained the effect of laughter and humour in recovery from extremely painful Ankylosing Spondylitis. His story inspired many researchers and resulted in the discovery that laughter causes our body to produce endorphins which are natural painkillers.

While studying physiological effects of laughter in the late 1960s, Dr. William F. Fry of Stanford University demonstrated that most of the body’s major physiological systems are stimulated by laughter. He proved that mirthful laughter provides good physical exercise and decreases the chance of respiratory infections.

Dr. Lee Berk of Loma Linda University medical centre and his team of researchers has shown that laughter reduces the level of stress hormones and thus helps in improving immunity by documenting increase in the level of immunoglobulin IgA and an increase in the number of NK cells (Natural Killer
cells) a type of white cells that play an important role in protecting us from tumours (Berk et al. 2001).

Dr. Michael Miller of Maryland School of Medicine reported that laughter dilates and expands the blood vessels. This increases the blood flow and reduces the risk of cardiovascular diseases (Kataria, 2011).

The Breakthrough – Laughter Yoga

In spite of the positive benefits of laughter, today people have forgotten to laugh. Laughter is fast disappearing from a highly competitive and tensed world. If we consider laughter as an expression of happiness, most of the people are not happy with their lives and they have no reason to laugh. On the other hand there are several reasons for us to be sad, depressed and frustrated. Thus the question of how can we still find laughter and who will make us laugh become very significant (Kataria 2011).

Laughter Yoga technique was used in Laughter Clubs which was started on 13th March 1995 in a public park in Mumbai by Dr. Madan Kataria. Till then there was no reliable and effective system to deliver laughter. Only tool available was humour and it is not a consistent thing which can produce continuous hearty laughter. Laughter arising out of humour is conditional which depends upon the person’s intellectual ability, state of mind and level of happiness and life satisfaction. But Laughter Yoga combines unconditional laughter with yogic breathing (Pranayama). Anyone can laugh for no reason, without relying on humour, jokes or comedy.
In a Laughter Yoga session laughter is simulated as a body exercise in a group. The group maintains eye contact and child-like playfulness and laughter soon turns real and contagious. According to Dr. Madan Kataria the founder of laughter yoga, the concept of Laughter Yoga is based on a scientific fact that the body cannot differentiate between fake and real laughter - if it is done with willingness, one gets the same physiological and psychological benefits, purely from the motion (Kataria, 2011). It goes well with an old saying, “If you are not happy, act like a happy person and you will become one.” Thus one important philosophy of laughter yoga movement is ‘Fake It Until You Make It’. Next is that laughter yoga differentiates happiness from joyfulness. Happiness is conditional while joyfulness is unconditional commitment to be happy for the moment and to have fun despite life’s problems. Joyfulness is a purely physical phenomenon while happiness is a concept of the mind.

When someone is joyful it results in physiological and biochemical changes. The generation of good feelings and a sense of well-being changes a person’s outlook towards life. Laughter Yoga teaches one to be joyful.

Kataria (2011) also explains laughter yoga as a child-like model or body-to-mind model. While observing children we can see that their laughter comes straight from the body and does not make use of any intellectual capacity of the brain. So a person who is willingly and actively participating in Laughter Yoga sessions can reap its benefits.

The same body to mind relationship is observed in another philosophy—“Motion Creates Emotion”. This philosophy also answers the question “How do you laugh when you are in no mood to laugh or you don’t have any reason to laugh?”
If one can bring changes in body behaviour one can experience the change in mental states too. Thus Laughter Yoga has the ability to synchronize both body and the mind, maintaining a mutual harmony (Kataria 2011). The two way link between body and mind is effectively tapped in Laughter Yoga technique.

Another philosophy of Laughter Yoga is that Laughter can be programmed into your body. It says that our body and mind can be trained to laugh at will. The Laughter Yoga techniques of Clapping in rhythm, chanting “ho ho ha ha” in unison, and positive affirmations like “very good, very good, yeah!” are some examples of expressions of joy practiced repeatedly in Laughter Clubs. With Laughter Yoga, the brain develops new neuronal connections that produce happy chemistry in the body. These reactions can be triggered simply by laughter exercises, and doing certain actions of the body, which lead the mind to experience the emotion of joy - no matter what (Kataria, 2011).

The Inner Spirit of Laughter is another most valued philosophy of the laughter yoga movement. It is not only for physical well-being but also to enhance the spirit and to touch the emotional core of an individual. The focus of many of the laughter exercises are on forgiveness, generosity, compassion and helpfulness. Laughter Yoga gives participants the opportunity to actively enhance the lives of others. It has the power to change the mind from a selfish state to an altruistic state. It fosters empathy among individuals. The inner spirit of laughter is revealed as people develop a state of internal peace through laughter yoga. It inspires people to make a better world for everyone.

The Laughter Yoga movement has incorporated another philosophy of World Peace through Laughter. Through spreading good health and joy this
movement ultimately aims for world peace. By observing the science and philosophy of laughter yoga one can realise that it is not an idealistic goal.

Repeated practice of laughter yoga will result in the release of high concentrations of hormones and neuropeptides related to feelings of happiness, warmth, unconditional love, bonding, tolerance, forgiveness, generosity and compassion - a joy Cocktail into our blood stream. This will in turn inhibit the production of other hormones that will lead to hatred, fear, violence, jealousy, aggression and the emotions related to war and oppression. Laughter Yoga is rooted on group dynamics for multiplication of this effect in an infectious manner. Like a chain reaction the positive effect of laughter will be made visible through its practitioners when they come into contact with millions of other people spreading the powerful emotional state of joy. War always spreads from inside a person to the outer world. So if peace can be generated within oneself it will automatically spread and flow to the outer world.

Laughter is universal and it is its own language. Therefore it has no barriers of culture, language, age, ethnicity, caste, creed, religion, colour, gender, nationality etc. “When you laugh you change; and when you change the whole world changes” (Kataria 2011).

Types of laughter

Depending on various parameters and different fields of the scientific research several kinds of laughter has been described. From a medical and therapeutic point of view five large groups can be summarized (Berk, Martin, Baird and Nazik 2008) (1) Genuine or spontaneous laughter; (2) simulated laughter; (3) stimulated laughter; (4) induced laughter; and (5) pathological laughter.
Spontaneous laughter is unrelated to one’s own free will. This can be triggered by positive emotions and different (external) stimuli. Ekman, Davidson and Friesen (1990) has reported that spontaneous laughter causes typical contractions of the muscles around the eye socket. Smiles and laughter actually trigger centres in the brain, even if artificially induced. Dr. Paul Ekman has opined that there is a brain pathway that allows you to generate your own emotions. French neurologist Dr, Guillaume Duchene mapped 100 facial muscles in 1862. In the course of that work he had pointed out that false or even half-hearted smiles involved only muscles of the mouth. But “the sweet emotions of the soul” activate the pars lateralis muscle around the eyes. According to him when lips part and turn up, the eyes crinkle up showing crow’s feet and the upper lip droops slightly, then there is heightened activity in the left anterior region of the cerebral cortex, which is the centre for happy emotions. This is explained as Duchene laughter /smile. “Simulated Laughter is triggered by oneself at will (self induced), with no specific reason (purposeful, unconditional) and therefore not elicited by humour, fun, other stimuli or positive emotions”. Stimulated laughter is due to certain external factors or as a result of physical contact or action (i.e. to be ticklish, specific facial or bodily motions). Induced laughter is due to the effect of some specific drugs or substances (i.e. alcohol, caffeine, amphetamines, cannabis, LSD, nitrous oxide or “laughing gas” etc.) Pathological laughter is secondary to injuries to the central nervous system because of neurological diseases or certain psychiatric disorders. (Mora – Ripoll, 2011). Pathological laughter sometimes comes with pathological crying”. It is without any specific stimulus or emotional changes and has no voluntary control
of its duration, intensity or facial expression (Wortzel, Uster, Anderson and Arciniegas, 2008).

Health related benefits of laughter are mainly reported from spontaneous laughter interventional studies compared to simulated laughter. The therapeutic value of laughter is mainly for spontaneous and simulated laughter. The simulated laughter technique like Laughter Yoga leads its practitioners to a state where there are no inhibitions to laugh. While the human mind can make a distinction between simulated and spontaneous laughter, the human body cannot do the same. Simulated laughter is a relatively under researched treatment modality with potential health benefits (Mora - Ripoll 2011).

Simulated Laughter exercises (Laughter Yoga) can be focussed as:-

1. Emotional wellness (pantomiming any action and adding laughter on top).

2. Physical workout (aerobic training and strength training and improving lung capacity).

3. Playful behaviours (this helps to dissolve inhibitions to laugh).

4. Special techniques (cross - brain exercises, dancing and singing exercises, empowering behaviours and conversations, group games, floor exercises, laughter and ideokinesis, laughing alone, laughing meditation).

There are a variety of exercises and new exercises can be developed and added further. These techniques can be practiced by kids, adults, elderly citizens, patients, and they can be done alone or in groups. It can be done while standing up, sitting on a chair, lying on the floor, and with or without props depending on level of
physical fitness (from 0 to very fit), underlying health conditions, or preventive or therapeutic aims (Gendry, S. 2011).

2.3 Studies on effect of laughter yoga on psychophysiological variables among the elderly and other population groups:

Effects of laughter therapy on depression cognition and sleep among the community-dwelling elderly were studied in Korea in the year 2007. (Ko and Young (2011)). The total sample consisted of 109 subjects aged over 65 divided into two groups; 61 subjects were in the control group whereas 48 subjects only were in laughter therapy group. The subjects in the laughter therapy group underwent laughter therapy four times over one month for a period of 1 hour per session. Therapy was performed by a Nurse who had been certified in Laughter therapy. The participants were selected through a free health consultation through a community centre in South Korea. The laughter therapy group gathered in a community centre while controls were contacted individually. Sampling was done randomly. The therapy sessions had a video show of laughter therapy and clapping in common for all four sessions. Otherwise the therapist used various therapy techniques for the four sessions. The samples were compared on Geriatric Depression Scale (GDS), Mini-Mental Status Examination (MMSE), Short-Form Health survey 36 (SF-36), Insomnia Severity Index (ISI) and Pittsburg Sleep Quality Index (PSQI) before and after laughter therapy. Study results showed that depression, insomnia and sleep quality improved in the laughter therapy group, while they worsened or showed no significant change in the control group. Study results did not show any difference between control & experimental groups in MMSE Scores and HRQOL.
The study had relatively small sample size, selection bias (samples were all from low socio economic group). The group effect of the experimental group on depression was not controlled. The laughter therapy was given only for a period of one month with four sessions. Though the study is explained as a randomized controlled trial there are several drawbacks in the design itself, as agreed by the researchers.

Shahidi et al. (2010) did a study on Laughter Yoga versus group exercise program in elderly depressed women who were members of a cultural community of Tehran. By administering Geriatric Depression Scale (score > 10). 70 elderly women were selected. After the administration of Life Satisfaction Scale pre-test and demographic questionnaire, subjects were randomly assigned to groups of laughter therapy, exercise therapy, and control. All the three groups underwent post test on depression and life satisfaction. The data were analyzed using analysis of Covariance and Bonferroni’s correction. The objective of the study was to compare the effectiveness of Kataria’s Laughter Yoga and group exercise therapy in decreasing depression and increasing life satisfaction among older women.

Typical sessions of Kataria’s laughter yoga were administered in ten sessions by a researcher trained in laughter yoga. But the duration of sessions or the timing of sessions are not mentioned by the authors. Aerobic group exercises were for thirty minutes and each sessions was different from others in time and intensity. Those on control did not receive any programme. The results showed that individuals in both laughter therapy and exercises group showed significant improvement in their GDS scores when Bonferroni’s correction was used for multiple comparisons between groups. Only subjects in Laughter Yoga group showed significant improvement in
their life satisfaction scores compared with controls and in LSS scores there was no
difference between the exercise group and the control group. Study results are
evidence for efficacy of laughter yoga in late life depression which is equivalent to
aerobic exercise programme. But the study is limited in its generalizability due to
small sample size and participation of elderly women from a special cultural
community. The authors have also identified lack of literature on Laughter Yoga
therapy on psychological and physiological variables among the elderly clients or
other subjects.

Nagendra et al. (2007) studied the efficacy of laughter yoga on IT
professionals to overcome stress. The participants were healthy IT professionals
(both male and female) and the sample size was 53 for the laughter yoga and 51 for
the control group. The researchers did only 20 minutes laughter yoga for 7 sessions
for a period of 18 days. The results showed a reduction in Blood pressure, early
morning cortisol level and perceived level of stress compared to the control group.
But there was no significant change in Heart rate. The results show evidence for
stress reduction in people practicing laughter yoga. Here also the number of sessions
and the sample size were limited affecting the generalizability of study results and
warranting further studies with improvement in design.

Mora Ripoll (2011) studied the potential health benefits of simulated
laughter through a narrative review of the literature and recommendations were
given for future research. Six interventional studies wherein simulated laughter in
some form were used along with assessment of its health related benefits were
reviewed. These studies showed that simulated laughter has resulted in improving
mood, morale, positive feelings, social identification, optimism etc. and has resulted
in reduced pain scores and depression. Period of therapy for the studies varied with one or two sessions per week for sixty minutes [for a maximum of eight weeks in one study]. The sample size were very small in these studies making it difficult for generalization. The article has identified general challenges in laughter research. One of the largest methodological problems is the failure to distinguish humour from laughter. These two are distinct events where humour is a stimulus that can occur without laughter and laughter is a response which can occur without humour. Another problem mentioned is that “laughter may not be able to be studied at a conventional “active ingredient” or “dose” level. A design to help preclude laughter absence, and to adjust for its intensity, dosage and duration, is to conduct simulated laughter interventional trials”. Reviewer has highlighted the issue of control groups as another methodological concern. Larger samples of healthy subjects and trials in different clinical populations are also warranted. Interdisciplinary well designed studies involving experts from different health care fields is another recommendation. This article shows the dirth of empirical data for the benefits associated with simulated laughter and specially using laughter yoga technique.

Cepon, Krebs and Herodez [2012] studied the effects of laughter yoga on blood pressure, pulse and the amount of oxygen in the blood. The subjects were elderly residing in a retirement home [Danica Vogrinec]. The researchers used the technique of laughter games, laughter meditation and relaxation. The sample size was 16 [14 women and two men] and the average age of participants was 77 years. The researchers used automated measurement device to table the BP, Pulse rate and oxygen saturation. Measurement was done before and after the 40 minutes practice sessions. The duration of total intervention is not mentioned in the study.
The laughter yoga was practiced in sitting position without physical efforts from the elderly. The researchers have reported that after the laughter yoga practice those participants with a high blood pressure level experienced a reduction in BP and those with low BP showed an increase thus giving evidence for the balancing effect of laughter yoga on blood pressure. Pulse rate showed an increase in clients who were participating for the first time and it decreased or remained the same in regular participants. There was a positive difference in blood oxygen saturation of participants with respiratory diseases after laughter yoga. But the researchers have not mentioned the statistical procedures used for the study, the sample size was very small and the study is not methodologically strong.

Matsuzaki et al. [2006] studied forty one patients with Rheumatoid Arthritis [RA] against 23 healthy subjects, as control. The experimental group listened to ‘Rakngo’ a traditional Japanese comic story to induce mirthful laughter. This was done by a professional story teller for one hour. Blood samples were collected within 10 minutes before and after the story from all participants. Immunological parameters were measured. The Wilcoxon signed rank test was used to compare each parameter before and after laughter. The Mann-Whitney U-test was employed to compare the results between the RA and control groups. The results showed that the basal levels of serum IL-6 and TNF-2 in the RA participants were significantly higher than those in healthy group. The levels of the serum IL-6 decreased significantly in the RA group but not in the healthy subjects, after experiencing mirthful laughter. The study findings suggest that mirthful laughter affects the levels of serum pro-and anti-inflammatory cytokines differentially, depending on the RA disease activity.
Skevington and White [1998] studied one hundred patients with chronic arthritis using interview and questionnaire about coping, well being and their use of humour. Patients who used less humour had reported more depressive symptoms and lower personal self-esteem. Regressions showed that depression could be best predicted through the inactive use of humour as a coping method. Patients with a more positive view tended to be younger, less disabled, in less pain and with several social advantages on a number of indicators. But they too had a longer duration of disease. The most disabled arthritis patients found laughter to be a most effective strategy. The research is having implications for the prevention of depression and coping with disability. The researcher further establishes the need for setting up laughter clinics and to empirically evaluate their benefits.

Mahony and Lippman (2002) in two experimental studies examined the types of laughter and the characteristics of laughter people associate with health and whether there are generational differences in these perceptions. The young adults characterised health promoting laughter as strong, active, uninhibited and involving movement. The older participants characterised it as socially appropriate. Both groups agreed on health promoting laughter strongly with positive emotion and absence of malice. The researchers have also attempted to differentiate between humour and laughter. Researchers are highlighting the need for methodological improvement in studies related to laughter.

Buchowski et al. [2007] studied the energy expenditure of genuine laughter among forty five adult subjects. Their objectives were to measure energy expenditure and heart rate during genuine laughter. The measurements in this strictly controlled experimental trial were by using Polar HR monitor and whole-room
indirect calorimeter. Laugh rate and duration were measured by digitized audio data using a computerized system. Results showed that genuine voiced laughter causes a 10-20% increase in energy expenditure and HR above resting values, which means that 10-15 minutes of laughter per day could increase total energy expenditure by 40-170 kj [10-40 kcal]. This study results must be viewed against the fact that the subjects were young adults and the generalizability of results to other age groups is not easy.

HsuMei-Chi et al. [2008] did a descriptive exploratory study to investigate the prevalence and the type of Complementary and Alternative Medicine use among older Taiwanese patients with a diagnosis of depression. Self-report questionnaire were used for the study. A convenience sample of 206 patients [98% response rate] completed the survey of which nearly 70% reported using at least one form of CAM in the past 12 months. Twenty one kinds of CAM were identified in the treatment of depression. Herbal medicines, spiritual healing and folk remedies were the most common. Only one third of participants discussed their CAM uses with the psychiatrists. Comparatively patients suffering from mild to moderate depression tended to use more CAM than participants with severe depression. No one used laughter, special diet, or osteopathy as CAM. The increased use of CAM is an evidence for people’s preference for a more holistic approach to health care. Health professionals may discuss such concerns with their patients as a part of ongoing assessment, patient education and management.

Thachil, Mohan and Bhugra [2006] reviewed the evidence of efficacy of different types of Complementary an Alternative Medicine [CAM] in depression with the aim of identifying the highest level of evidence. The search was limited to
English language and 19 papers formed the final review. None of the CAM studies show evidence of efficacy in depression according to the hierarchy of evidence. Laughter was listed by the researchers as one of the CAM. The RCT model and the principles underlying many types of CAM are dissonant, making its application in the evaluation of those types of CAM difficult.

Mathew and Manickaraj [2012] did a study among the Institutionalised Senior Citizens at Pathanamthitta district Kerala on the effectiveness of Psychological and Relaxation Training Programme to reduce depression. Sample size was 30. Demographic characteristics and depression [using Beck’s depression inventory] were assessed.

Karl Pearson’s Correlation Coefficient, Students’ ‘t’ test and Paired ‘t’ test were used to analyse the data. The results indicate that the demographic variables such as age, gender, education, occupation, marital status, economic status and geographical area of living have no effect on depression in senior citizens. The samples were suffering from mild and moderate depression. Jacobson’s progressive relaxation technique was formed to be effective in reducing depression. However the generalizability of the findings is limited due to small sample size.

Rondon et al. [2002] studied the impact of hemodynamic and left ventricular function on short-term post exercise blood pressure reduction in elderly hypertensive patients and also the 22-h post exercise effects on ambulatory blood pressure in elderly hypertensive patients. 24 elderly hypertensive patients [age 68 ± 1.5 years] and 18 ages matched normotensive control subjects [age 68.1 ± 1.2 years] were the subjects. Low intensity bicycle exercise decreases left ventricular end-diastolic volume and a decrease in Stroke Volume. The clinical relevance of low-intensity
exercise in elderly hypertensive patients is evidenced by the 22-h post exercise reduction of blood pressure in elderly hypertensive patients.

Sakuragi, Sugiyama and Takeuchi [2002] investigated the effects of laughing and weeping induced by watching comedy and tragedy videos on mood and autonomic nervous function, among ten healthy female volunteers. The participants filled out profiles of mood states (POMS) to evaluate their mood while watching videos. Before, after and during the experiment chest electrocardiogram and respiration curve were recorded. Spectral analysis of heart rate variability (HRV) was done to estimate autonomic nerves functions. Subjects were observed to be laughing or weeping according to the videos they watched. After watching the comedy videos anger hostility score of the POMS decreased and vigour score increased significantly where as the tragedy videos resulted in significant increase in depression - dejection score. Both groups had an increase in HRV but there was difference in the time course of response. Subjects who watched comedy videos had an immediate increase in the low frequency (LF)/high frequency (HF) ratio which reflects cardiac sympathovagal balance. But it returned to the basal level right after they stopped watching. On the contrary the LF/HF ratio increased gradually to a lesser extent while watching tragedy videos. The high frequency component reflecting cardiac parasympathetic nerve activity gradually decreased while watching both videos, but did not return to the basal level after watching tragedy ones. These results are suggestive of a strong but transient effect on the autonomic nervous system due to laughing and moderate but sustained effect while weeping. These results are from healthy volunteers and from a very small sample. This study is only about the acute effect of weeping and laughing. The chronic effects of
laughing and weeping on autonomic nervous system is to be examined to know their use in stress coping

Tiwari, Pandey and Singh (2012) did a preliminary study on mental health problems among inhabitants of old age homes in Lucknow city. Three old age homes were selected randomly and Forty five elderly inhabitants who were consenting to participate were interviewed by the research staff. Survey Psychiatric Assessment Schedule (SPAS). Mini Mental State Examination (MMSE). Mood Disorder Questionnaire (MDQ) and SCAN based clinical interview were applied for assessment of subjects. Depression (37.7%) was found to be the most common mental health problem followed by anxiety disorders (13.3%) and dementia (11.1%), 64.4% of the inhabitants were having psychiatric morbidity and none of the participants were found physically fit. But these observations need to be substantiated by large studies, since the sample size for this study is small.

Hsu and Wright (2014) did a study on ‘the association between participation in social activity and depressive symptoms in institutionalized elders in Taiwan’. The study design used by these researchers was a cross-sectional descriptive and correlational one. A convenient sample of 174 elders were recruited from Thirteen mid-sized private pay, long-term care facilities, including six intermediate care facilities, and seven nursing homes, who were 65 years or above. The subjects were ambulatory, able to speak fluent Mandarin or Taiwanese and cognitively intact as assessed by the Short Portable Mental status questionnaire with < 3 response errors on 10 item questions. Those who were bed ridden, with severe speech and hearing impairment, those with diagnosis of dementia, or any psychiatric disorder except depression were excluded from the study. The researchers used Demographic
questionnaire. The Barthel index (to measure functional independence) Geriatric Depression Scale short version (GDS), to assess the clients. The socially supportive activity Inventory (SSAI) was used to evaluate the nine social activities in elder care homes. 31% of participants scored > 6 on GDS. Among the nine types of social activities an ANCOVA indicated that elders who were clinically depressed showed significantly lower activity attendance and a lower perception of meaningfulness and/or enjoyment related to the activity “social contacts with family members and friends” (P<0.05). There was no difference between the depressed and not depressed regarding “pleasure trips” and “religious activities”. Results of this study shows that meaningful and enjoyable activities were associated with fewer depressive symptoms among institutionalized elderly.

But this study was based on a convenience sample from a specific geographic location with a culturally homogenous sample and hence the generalizability of the study is very much limited. Recall bias and reduced response precision from the elderly are also admitted as limitations of the study. However the study shows how important it is for Nurses to understand the essential purpose and nature of social activities planned for the elderly clients.

Lee et al. (2014) studied Physical activity and depressive symptoms among older adults using secondary data analysis of the National Health and Nutrition Examination Survey of the civilian, non-institutionalized U.S. Population. The study focused on 805 adults aged 65 and older who completed objective physical activity measurement with an accelerometer and depression screening by Patient Health Questionnaire - 9 (PHQ - 9). Socio demographic information related to age, gender, race/ethnicity, marital status, education, annual household income, chronic medical
conditions, and Body Mass Index (BMI), alcohol use, smoking, chronic medical conditions, medication use etc was also collected. Data analysis was done using descriptive statistics and logistic model. Four percent of participants reported moderate depressive symptoms, and 24% of subjects exhibited sedentary Physical Activity. Factors associated with increased risk of moderate depression included age, sedentary PA, and chronic, mental conditions (p< 0.05). Physical activity was found to be a protective factor in depression.

But generalizability of the results are limited since the study is only with community dwelling elderly. Only limited factors were included to explain depression. The researchers also admits that depression may be under represented in the study because people with depression may not have participated in this survey due to their low mood itself and if at all, they may not have been wearing the accelerometer. This study is showing evidence regarding the importance of physical activity in mental health.

Krause-Parello [2012] studied ‘Pet ownership and Older Women’. The relationships among loneliness, Pet attachment support, Human Social support and depressed mood among 159 pet owning older women residing in the community located on the east coast of the United States. Women aged 55 to 84, owned a Canine or Feline, resided in independent housing and were able to communicate in English were selected for the study. The researcher used a demographic questionnaire, Psychological General Well-Being (PGWB) schedule. Depressed Mood subscale, revised UCLA loneliness scale, Pet Attachment Scale (PAS), and Coping Strategy Indicator (CSI): Seeking Support Sub scale (to measure human social support). Bivariate correlations and regression analyses were conducted using
SPSS version 16 for windows. The results supported significant relationships between loneliness, pet attachment support, human social support, and depressed mood. Pet attachment was a greater source of support to lower depressed mood in this sample compared to human support.

Nurses working with Geriatric Population can utilise these findings to effectively manage depression among the elderly. Researcher also points out the increased life time prevalence of depression among females compared to the male population. Value of such interventions must be viewed against cost of treating depression and the problems of poly pharmacy among the elderly. These are the methods that will improve the overall well-being of the elderly clients.

‘Inner Strength in Relation to Functional Status, Disease, Living Arrangements and Social Relationships among People Aged 85 years and Older was studied by Lundman et al. (2012). The researchers used data from a sample of 185 people in the Umea 85+ Cohort study to relate inner strength and its attributes to objective health variables. It was a population-based epidemiological study from a Medium-Sized town and a rural district in northern Sweden. Every second person was selected for the study, and 185 participants completed the study.

Measurements were done using The Resilience Scale (RS), The sense of Coherence Scale (SOC), The purpose in Life Scale (PIL), The Self-Transcendence Scale (STS), The Geriatric Depression Scale (GDS), and Activities in Daily Living (ADL) Staircase (revised version of the Katz ADL Index). Besides the researchers assessed the Medical Diagnoses and Registered drugs, Living arrangements, and social relationships. The results of the scales were normalized, and a sum score was calculated. The linear correlations between the assessment scales and between the
scales and the sum scores were calculated. Factor analysis and reliability analysis with Cronbach’s alphas were done to confirm the validity of merging the assessment scales into one sum score. ‘t’ test and Pearson correlations were calculated with a p value of < 0.5. Results showed that prevalence of heart failure, Chronic Obstructive pulmonary disorder, Osteoporosis or diagnosed depression was associated with low inner strength. Various measures of social relationships were significantly related to high inner strength. This study showed that participants with a higher degree of inner strength had better physical health and more satisfying social relationships. The authors conclude by stating the importance of promotion of inner strength among the elderly clients by Geriatric Nurses.

The study showed lower inner strength in women compared to men which is consistent with increased incidence of depression among females. It also urges the need for focusing on the strengths of the elderly than their frailty.

This article appeared interesting to the researcher since ‘Laughter Yoga’ is a technique that can actually promote the inner strength of a human being through subtle ways.

Hegeman, Kok, Mast and Giltay (2012) did a meta-analysis on ‘Phenomenology of depression in older compared with younger adults’. Since late life depression is a common psychiatric disorder in old age the researchers decided to investigate the effect of age on the phenomenology of major depression. They did a systematic search in Pubmed, Embase and Psych INFO for all studies examining the relation between age and phenomenology of major depression according to RDC, DSM and ICD criteria. Studies that used Hamilton Rating Scale for Depression only was included. Those studies that are not comparing old age and younger age
phenomenology of depression, studies without primary data, studies with participants having bipolar disorder, schizo affective disorder or dementia were excluded from the meta-analysis. Eleven papers were analysed. Results showed that older depressed adults, compared with younger depressed adults demonstrated more agitation, hypochondrias is and general as well as gastrointestinal somatic symptoms. Feelings of guilt and loss of sexual function was more prevalent in younger people.

The findings of the meta analysis is very much relevant for Geriatric Nursing practice. Major depression in older people is presented in a more somatic way and this may lead to poor diagnosis of cases of elderly having depression. Most of the studies may be rating depression at a much lower level than its actual prevalence.

Nani (2014) studied ‘Depressive feelings of elderly clients above the age of 60 years living with their family members’ using explorative survey method. 160 elderly subjects from Dhemaji district, Assam were the study participants. Multi stage sampling technique was used. Socio-demographic profile, Geriatric Depression Scale (30 items original version), a tool on Causative Factors of elderly depressive feelings, (developed by the author) were the tools used for this study. The data were analysed using ANOVA, $\chi^2$ test, Spearman’s Rank order correlation (demographic variables against depression), Person correlations (of geriatric depression score with individual, familial and social cause) regression (on the same) and Factor Analysis. Results showed majority of respondents were between the age group of 60-70 years (49.4%), male (58.1%), married (64.4%) belongs to joint family system (74.4%), illiterate (45.6%) depends mainly on cultivation and other sort of business (61.9%). The mean depression score was $19.73 + 7.17$ indicating
negative skewness of -0.90. 86.9% of elderly were screened as depression. 61.9% of the cases were severely depressed and 25% of them were mildly depressed. The causative factors reported were economic problems (73.8%), chronic pain (65.6%), loneliness (62.5%), lack of time of children spent with elderly (61.3%), and lack of involvement in work (55%). Geriatric scores showed no association with individual and familial cause but it was significantly correlated to social cause.

The study findings points to the problem of Geriatric depression which is unrecognized, untreated and therefore resulting in physical and psychological pain for the family and the elderly. The role of psychiatric Nurses in teaching the community for early detection and treatment of depression is highlighted through this study.

A pilot study on ‘Reducing depression among community-dwelling older adults using life-story review was done by Chan et al. (2014). This study is an experimental pre-post-follow up conducted between July 2012 to February 2013. The life-story review is an effective intervention to express one’s inner feelings and provide emotional catharsis. It was a two months duration study with repeated measurements taken at week one (baseline), two, three, four and 8 weeks for a total of five assessments on the depression levels. 29 older Malays aged 60 and above with mild to moderate depression were randomly allocated to the life-story review (intervention) group (n=15) or the non life story review (control) group (n=14). Depressive symptoms were measured by the Geriatric Depression Scale 15. Reduction in depression scores were found in the intervention group from week one (Mean ± SD 5.9 ± 2.3) to week eight (1.9 ± 1.6) compared with the control group (week one; 5.0 ± 1.3, week 8, 3.5 ± 1.5). A significantly lower level of depression
was shown by the intervention group compared to the control group at week 8 ($\chi^2 = 14.61, p< 0.001$).

Through this study provides research evidence for a non pharmacologic method in treating the symptoms of depression in cognitively sound community residents it is with several short comings. One is the small sample size and the other point is homogenous sample-both limiting the generalizability of study findings. Blinding was not possible in this study thus causing a Hawthorne effect which was likely and which could have altered the participant’s behaviour and influenced the depression scores to appear more favourable. The subjects could be possibly studied after the 8th week to see any changes in their depression scores.

This study is similar in pattern to the current research on Laughter Yoga and the researcher too had experienced similar results and similar limitations. Thus this review was added to the current work (after the completion of the study).

‘The effect of humour on elder mental and physical health’ was studied by Ganz and Jacobs (2014). The target population for the study was community dwelling older adults.

Elderly who could not read or write in Hebrew or English and / or having cognitive impairment were excluded from the study. Those who were attending any one of four senior centres were included. The researchers administered” Humour as a way of Life “programme consisted of one session per week lasting 2-3 hr per session. Sessions were administered by a humorist. Control group subjects continued attending the centres without any form of intervention. RAND Health status questionnaire, The General well being scale (GNB), The Brief symptom Inventory
(BSI) were the tools administered and data were analysed using ANCOVA. Control group had 42 subjects and there were 50 subjects in the humour workshop group. Majority of the participants were females (74.4%). Humour workshop participants showed improved mental health, as measured by improvement in positive well-being (F (164) = 11.3, P=001) and by the BSI (F (1.65)-38.0, P= .0001) and increased total general well-being (F (1.61) = 31.1, P= .0001). There were no statistically significant differences for any of the other psychological distress domains or of the physical health domains.

This study had many limitations like increased attrition rate (low-moderate) in both groups, convenience sampling, lack of information about medical co-morbidity, medication status, anti anxiety and anti depressant therapy etc. Cultural setting differences also need to be looked into such studies.

Tanner, Martinez and Harris (2014) did a study on (examining functional and social determinants of depression in community-dwelling older adults: Implications for practice” among 538 homebound, community-dwelling older adults living in rural areas in the southern U.S. Participants were interviewed by registered nurses prepared to conduct screenings. The instruments used for data collection were- psycho-social measures to assess depression, loneliness, social isolation, and family support. Instrumental activities of daily living (IADL) and mental status. To measure depression Geriatric Depression scale was used. Majority of the subjects were females (76.1%), 35.9% of subjects were depressed.

Loneliness (p<0.001), family support (p<0.001), functional status (p<0.001) were found to be significant independent predictors of depression status in the sample of home bound elderly. Reports of chronic diseases like arthritis, heart and
cardiovascular conditions, hypertension, diabetes mellitus and chronic respiratory diseases did not contribute to the significance of the model after adjusting for loneliness, family support, and functional status. Gender and race was also not found as significant predictors of depression. Loneliness was the strongest predictor of depression in the model. 42.6% of the elderly were able to perform ADL independently. The association among social determinates of health variables including family support, someone to call for help and perceived help from family and friends were strong which indicate multicolinearity among these variables. The study result also shows that the number of chronic conditions and the number of medications taken per day was not significantly related to depression ($r=0.26$, $p<0.001$). It seems that rather than these conditions the functional limitations resulting from them are directly related to depression - a finding which is also supported by Barry, Murphy and Gill (2011).

This study is with several nursing implications for the care of aging population. Nurses must understand the relationship between support, functions and depression. Primary prevention of depression is still remaining as an understudied area mainly among low-income home bound elderly. This study concludes that depression among elderly is significantly high but it remains under recognized, thus limiting access to needed treatment. Early interventions may delay or diminish depressive symptoms and improve the quality of life of the elderly.

Kochummen and Paul (2013) did a study to assess the ‘impact of laughter therapy on occupational stress among staff Nurses working in KIMS Hospital, Thiruvananthapuram. The researchers adopted a pre test – post test control group time series design. 90 Nurses who were willing to participate in the study were
distributed 45 each to the control and the experimental group. Therapy was administered to the experimental group for five days per week for two weeks. Duration of a single session was 20 minutes. Only 33 nurses attended all sessions. The occupational stress among staff nurses was assessed using Self-Percept Occupational stress scale. There was significant difference in the mean score of occupational stress among staff nurses in the control and experimental group between pre test to post test/ and post test to pre test 2 at p< 0.01 and p< 0.001 levels respectively. The authors concluded that there is a positive effect of laughter therapy on occupational stress. But they have also reported that there was no lasting effect for the intervention. This study is with several short comings like convenience sampling, possibility of sample contamination, small sample size and very short duration of intervention. Thus the generalizability of the findings are very much limited.

2.4 Conclusions from the review

The review has shown studies that give sufficient evidence to suggest the positive and quantifiable psycho physiological effects on certain aspects of health. The value of laughter as an exercise programme and a psychotherapeutic group intervention is reflected. But the studies have used a combination of methods to generate humour and thereby creating laughter; for example the use of videos, comedies, comic story telling etc. Laughter Yoga which is a simulated technique needs much more study. The sample size was very small in most of studies. The intervention studies mostly used the pre test post test design. The duration of therapy and follow up after the major study was not sufficient to draw conclusion about the long term effects of laughter yoga. Moreover suitability of this method among frail
elderly is not studied much. The studies that were done among elderly are related to community dwelling elders. Studies available related to complimentary/alternative medicine (CAM) recognizes laughter as a method but which is seldom used by patients. This shows the lack of awareness among health professionals regarding the benefits of laughter and the techniques for practicing simulated laughter. Generating further evidence through systematic research is emerging as a felt need from the review of literature.

2.5 Summary

This chapter discussed the theoretical overview of laughter therapy with emphasis on its history, philosophy and theoretical framework. Further studies related to the effect of laughter on psycho physiological variables among different population were reviewed. The researcher has also presented a conclusion of the review.