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HEALTH BEHAVIORS

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Abstract:-
Health is defined as a complete state of physical, mental and social well-being and not merely the absence of disease and infirmity [World health organization, 1948]. Defining health as the absence of illness, health is recognized to be an achievement involving balance among physical, mental and social well-being. Physical health is inextricably interwoven with psychological and social environment. All conditions of health and illness, not just the disease, identified by the early psychosomatic theorists are influenced by psychological and social factors. The mind and the body cannot be meaningfully separated in matters of health and illness. This article defines health behaviors as any activity undertaken for the purpose of preventing or detecting disease or for improving health and well-being. Common ways of classifying different health behaviors (e.g., health enhancing, health compromising) are examined. Prevalence of key health behaviors (smoking, diet, exercise, screening, sexual behaviors, alcohol use) in different groups and their relationship to morbidity and mortality is reported. This presentation highlights the role of cognitive variables (such as health beliefs, attitudes, self- efficacy) as described in psychological models in understanding the distribution/prevalence of health behaviors and the use of such models in changing health behaviors.

Key words- *Health behavior, Models of health behaviors.*

INTRODUCTION:-

Health is a multi-dimensional and multi factorial concept. The factors which influence health lie both within in the individual and externally in the society in which the individual lives. Likelihood of what disease one may fall victim, depends on a combination of two sets of factors - genetic factors and the environmental factors to which the individual is exposed. These factors interact and these interactions may be health promoting or deleterious. Thus, conceptionally, the health of individuals may be considered to be the result of many interactions. Different theoretical models of health and disease are proposed by health researchers. The emergence of interactive model of mind and body has significantly contributed for understanding the concept of health and its promotion. Health models explain not only the onset of disease, its management, progress of disease. But they also explain its impact at different level substantiating the multidimensionality, multifaceted component of health. Life style factors such as smoking, alcohol intake, stress, food habits, lack of exercise and sleep disturbances contributing to several non -communicable diseases is clearly documented. On the other hand disease affecting the life activities ,life processes, quality of life need to be documented for the purpose, promotion, management and rehabilitation of Coronary Artery Disease (CAD), Diabetes Mellitus ,Cancer, Stroke and Hypertension. These diseases fundamentally affects the organ, specific functions and process, is a threat to life of the individual and on the same note it affects the cognitive, psychological and emotional functioning of the individual which impact their quality of life and also contributes to its deterioration. Interest in behaviors that have important impacts on our health and well-being is based upon two assumptions; (a) that a significant proportion of the mortality from the leading causes of death is caused by the behavior of individuals, and (b) that such behavior is modifiable (Conner and Norman 1996). Behavior is held to exert its influence on health in three basic ways: by producing direct biological changes, by conveying health risks or protecting against them, or by leading to the early detection or treatment of disease (Baum and Posluszny 1999). With this background, this article highlights the different types of health behavior, the prevalence of key health behaviors and their relationship to morbidity and mortality is then examined.

1. The Definition of Health Behaviors

Health behavior-any activity that is undertaken by the people to enhance or to maintain their health. Positive health behavior is any behavior that is beneficial for a person's health and negative health behavior is a behavior that is detrimental to a person's health. Health behaviors have been defined in various ways. For example, Conner and Norman (1996) define them as any activity undertaken for the purpose of preventing or detecting disease or for improving health and well-being. Gochman (1997) defines them as `behavior patterns, actions and habits that relate to health maintenance, to health restoration and to health improvement'. Behaviors within this definition include medical service usage (e.g., physician visits, vaccination, screening) compliance with medical regimens (e.g., dietary, diabetic, antihypertensive regimens), and selfdirected health behaviors (e.g., diet, exercise, smoking, alcohol consumption). All have received considerable attention from social and behavioral researchers and we now have a good understanding of the factors influencing how and why individuals engage in such behaviors. In describing health behaviors it is common to distinguish health enhancing from health impairing behaviors. Health impairing behaviors have harmful effects on health or otherwise predispose individuals to disease. Such behaviors include smoking, excessive alcohol consumption, and high dietary fat consumption. In contrast, engagement in health enhancing behaviors conveys health benefits or otherwise protects individuals from disease. Such behaviors include exercise, fruit and vegetable consumption, and condom use in response to the threat of sexually transmitted diseases.

2. Prevalence of Health Behaviors

Perceived symptoms control health behaviors when, for example, a smoker regulates his/her smoking on the basis of sensations in the throat. Access to medical care has been found to influence the use of such health services (e.g., Black Report 1988). Personality factors have also been associated with health behaviors (Adler and Matthews 1994). Cognitive factors also determine whether or not an individual practices health behaviors and may explain how other factors influence behavior. Knowledge about behavior–health links is an important factor in an informed choice concerning health behaviors. Various cognitive variables have been studied including perceptions of health risk, efficacy of behaviors in influencing this risk, social pressures to perform the behavior, and control over performance of the behavior. The relative importance of various cognitive factors in determining who performs various health behaviors constitutes the basis of different models. Such models have been labeled social cognition models (SCMs) because of their focus on cognitive variables as the primary determinant of individual social behaviors. These SCMs provide a basis for understanding the determinants of behavior and behavior change .Each of these models emphasize the rationality of human behavior and assume that behavior is based upon elaborate, but subjective, cost–benefit analysis of the likely outcomes of differing courses of action. It is assumed that individuals generally aim to maximize benefits and minimize costs in selecting a behavior.

3. Key Health Behaviors

Numerous studies have examined the relationship between health behaviors and health outcomes (e.g., Blaxter 1990) and have demonstrated their role in both morbidity and mortality. One of the first such studies identified seven features of lifestyle which were associated with lower morbidity and higher subsequent long-term survival: not smoking, moderate alcohol intake, and sleeping 7–8 hours per night, exercising regularly, maintaining a desirable body weight, avoiding snacks, and eating breakfast regularly (Belloc and Breslow 1972). Health behaviors also impact upon individuals' quality of life, by delaying the onset of chronic disease and extending active lifespan. Smoking, alcohol consumption, diet, gaps

in primary care services and low screening uptake are all significant determinants of poor health, and changing such behaviors should lead to improved health. For example, in the USA, Healthy People 2000 (US Department of Health and Human Services [USDHHS] 1990) lists increased physical activity, changes in nutrition and reductions in tobacco, alcohol and drug use as important for health promotion and disease prevention.

3.1. Diet

The impact of diet upon morbidity and mortality are well established (USDHHS 1988).In the Third World, the problems related to diet and health are ones of under-nutrition; in the First World, the problems are predominantly linked to overconsumption of food. In Western Industrialized countries excessive fat consumption and insufficient fiber, fruit and vegetable consumption are related to health problems. In addition, excess consumption of calories combined with insufficient exercise has made obesity a major health problem. Diet has been implicated in cardiovascular diseases (CVDs), strokes and high blood pressure, cancer, diabetes, obesity, osteoporosis, and dental disease. It is generally agreed that elevated blood cholesterol level is a major risk factor for the development of CVD (Consensus Development Conference on Lowering Blood Cholesterol to Prevent Heart Disease 1985). Nutbeam and Catford (1990) estimate that 26 percent of men and 25 percent of women in the UK have cholesterol levels greater than 6.5 mmol l-1 (a level considered to be excessive). While in the USA, it is estimated that 50 percent of the adult population is at risk of CHD by virtue of elevated blood cholesterol levels (Sampos .1989). The reduction of blood cholesterol via dietary change is now widely accepted as an important way of tackling CHD. Dietary recommendations include reducing fat in the diet and increasing soluble fiber intake. However, their impact upon cholesterol levels may be limited.

3.2. Exercise

The potential health benefits of engaging in regular exercise include reduced cardiovascular morbidity and mortality, lowered blood pressure, and the increased metabolism of carbohydrates and fats, as well as a range of psychological benefits such as improved self-esteem, positive mood states, reduced life stress and anxiety. Nevertheless, a significant proportion of the population led a sedentary lifestyle. The General Household Survey (1989) indicated that only one in three men and one in five women in the UK participate in any sport or recreational physical activity. Moreover, the Allied Dunbar Fitness Survey (1992) of 6,000 English adults reported that one in six adults had done no exercise (i.e., for 20 minutes or more at a moderate or vigorous level) in the previous four weeks. Participation in regular exercise is strongly related to a number of sociodemo graphic variables. In particular, young people and males are more likely to engage in regular exercise. For example, the 1988 Welsh Heart Health Survey (HPAW 1990) reported that among 18–34 year olds, 61 percent of men engaged in moderately vigorous exercise at least two times a week compared with only 35 percent of women. For 35–64 year olds, the percentages drops to 37 percent for men and 17 percent for women. Overall, across First World countries the typical exerciser is likely to be young, well educated, affluent and male.

3.3. Sleep and Health

Major sleep disorders are tied to hormonal levels at menopause. Quality of sleep compromises health. Depressed individuals have most common sleep disorder .Chronic insomnia reduces the ability to secrete and to respond to insulin increases the risk of Coronary Heart Disease, have adverse effects on immune functioning. (Reduces the efficacy of flu shots), decrease cognitive functioning, affects mood, and affects performance in work and effects of quality of life.

3.4. Health Screening

Individuals may seek to protect their health by participating in various screening programs which attempt to detect disease at an early, or asymptomatic, stage. In the UK, screening programs have been set up for various diseases, including anemia, diabetes, bronchitis, cervical cancer and breast cancer. Considering breast cancer, it has been estimated that breast screening programs which include mammograms can reduce breast cancer mortality by up to 40 percent among women aged 50 and over (Strax 1984). However, participation rates in breast screening programs show great variability across different countries, ranging from 25 percent to 89 percent (Vernon et al. 1990). Participation tends to be negatively related to age and positively related to education level and socioeconomic status.

3.5 Accident Prevention

Accident-one of the largest cause of death among children, adolescents and young adults. Major cause of preventable death in 8 billion per year. Strategies to reduce accidents – Focus on health psychology research and intervention.Accidents in the home-such as accidental poisoning and falls are the most common cause of death and disability in children under 5 years. Accident can be prevented by teaching safety skills to children. Parenting classes can be provided to parents. Provide information to new parents about “childproofing” the home. Social engineering solutions such as safety caps, gloves and strict guidelines for occupational safety can be initiated. They are effective in reducing injury and mortality. Safety caps and strict guidelines regarding occupational safety by the organization. To promote the use of seat belt, a combination of social engineering, health education and psychological intervention may be most appropriate. Motorcycle and Automobile Accidents are the single greatest cause of accidental death. Little psychological research are helping people avoid vehicular accidents. Safety measures to reduce mortality. Wearing seat belts and helmets. Reducing highway driving speed of 40 Kilo meter per hour. Placing infants and young Children in safety restraint car seats have reduced the number of severe injuries and vehicular fatalities. Reflective clothing among bike/motorcycle riders. But many people don’t follow these measures. Examples: Seat belts, especially among adolescents

3.6 Cancer-Related Health Behaviors

Breast cancer remains leading cause of cancer death. Strikes 1 in 8 U.S. women. 90% detected through Breast Self-Examination. BSE is the practice of checking the breasts to detect alterations in the underlying tissue. Ideally the breasts are palpated. Once per month, day 10 of menstrual cycle in both standing up and lying down position. The correct practice of BSE involves checking all the breast tissue, including nipples and the area under the arm pits. Relatively few women practice BSE. Few women practice BSE correctly. Theory of Planned Behavior and Health locus of control beliefs predicts BSE. Barriers to BSE are as follows, such as (a**)** Not knowing exactly how to do it. (b).Breast tissue tends to be lumpy, beginners find lumps frequently. (c).Synthetic models help accuracy and confidence by improving self-efficacy (d).Fear may act as a deterrent. Teaching BSE by physician or nurse leads to better and more regular practice of BSE.For Women aged 50 and older, national health guidelines recommend Mammograms every year. For at risk women over age 40, health guidelines also recommend yearly mammograms. Reasons for importance of screening through Mammogram are (1). Prevalence of breast cancer remains high. (2). Majority of breast cancers are detected in women over age 40. (3). Early detection improves survival rates. (4).Breast cancer screening programs that include mammograms can reduce deaths from breast cancer by 35-40 % in older women. (5).Compliance with mammography is low. Deterrents to getting regular mammogram include Fear of radiation, Embarrassment over procedure, anticipated pain, Concern about cost, especially among poor women, Lack of awareness, time, incentive, availability. Encouraging to have routine medical diagnostic procedure like Mammogram and Pap smear test for early detection of cervical cancer. Testicular cancer is the most common cancer in men between the ages of 15 to 35 years. And it is a leading cause of death for men 15 to 35 years. Incidence is increasing. But with early detection, cure rate is high. Symptoms include (a).Small, painless lump on front or side of testicle. (b).Feeling of heaviness in the testes. (c).Dragging sensation in the groin. (D).Accumulation of fluid or blood in scrotal sac. TSE Exam it involves becoming familiar with surface, texture, consistency of testicles. Examination during warm bath/shower. Examination involves by Rotating testicle between thumb and forefinger to detect lumps. Educational interventions increases Frequency of TSE, proficiency in TSE- efficacy of TSE and more long term practice, no documented relation of TSE to reduction in advanced testicular cancer for present, each young man is urged to decide about the practice of TSE. Colorectal cancer in western countries, is the 2nd highest cause of cancerous deaths. Medical guidelines have increasingly recommended routine colorectal screening for older adults. Colorectal screening is distinctive for the facts that people often learn they have polyps rather than malignancies. Participation is predicted by self-efficacy, perceived benefits of the procedure, physician's recommendation to participate, low perceived barriers to taking advantage of the screening program. Community based interventions such as mass media, use of social network, health care provider recommendations and reminder notice promote participation in early detection processes. There is a Fourfold increase of Skin Cancer in 30 years. Melanoma incidence have been risen in 20 years. The chief factor for skin cancer are (a).Excessive exposure to ultraviolet radiation (b).Living or Vacationing in southern latitudes (c). Participation in outdoor activities (d). Use of tanning salons (d).All contribute to dangerous sun exposure. Best predictor of sunscreen use is type of skin .Factors influencing sunscreen use are perceived need for sunscreen, perceived efficacy of sunscreen use. (Prevent cancer), social norms regarding sun screen use, health communications that enhance these perceptions may be helpful in increasing the practice of sun screen use. Social engineering solutions in which few schools have sun protection policies encourage children and teens to use sun screen.

3.7 Sexual Behaviors

Sexual behaviors are considered health behaviors because of their impact upon the spread of sexually transmitted diseases (STDs) such as gonorrhea and syphilis .More recently, the role of sexual behaviors in the spread of human immunodeficiency virus (HIV) has been a focus of attention. While early health education campaigns emphasized the need to reduce the number of sexual partners or avoid particular sexual practices (e.g., anal sex, penetrative sex), more recently the focus has been upon the use of condoms during penetrative sex to reduce the risk of HIV transmission. Condom use is particularly recommended for those with multiple partners or those who do not know their partners' sexual history. For these reasons, much of the health advice concerning condom use has been focused on young people .There seems to be considerable variation in the use of condoms in response to the threat of HIV/AIDS. For example, studies in the UK and USA report rates of between 24 and 58 percent (Fife-Schaw and Breakwell 1992, Gerrard et al. 1996). The General Household Survey (1993) in the UK reported changes by age group in the use of condoms for the period 1983 to 1991. Among 16–24 year olds, condom use increased from around 6 percent to around 12 percent during this period, while among 40–49 year olds it dropped from around 18 percent to around 12 percent over the same period.

3.8 Smoking

Smoking is the health behavior most closely linked with long-term negative health outcomes. Morbidity and mortality from coronary heart disease (CHD) are increased among smokers (Doll et al. 1994). Moreover, there is a strong positive relationship between the number of cigarettes smoked per day and the incidence of CHD (Friedman 1979). Smoking has also been linked to a number of cancers, including cancer of the lung, throat, stomach and bowel as well as a number of more immediate negative health effects such as reduced lung capacity and bronchitis (Royal College of Physicians 1983). Despite the array of negative health outcomes, smokers often report positive mood effects from smoking and the use of smoking as a strategy for coping with stress. The number of people smoking in the USA and UK has shown a steady decline over the past twenty years. Data from the General Household Survey showed that 28 percent of people over the age of 16 smoke in the UK. Smoking is more common among men and among unskilled manual workers (General Household Survey 1994). A similar pattern is evident in the USA and other First World countries, with smoking more

common among less educated, lower income and minority groups (Rigotti 1989). Those who quit smoking reduce the risk to their health, particularly if they quit before 35 years of age (Doll et al. 1994).

3.9 Alcohol Use

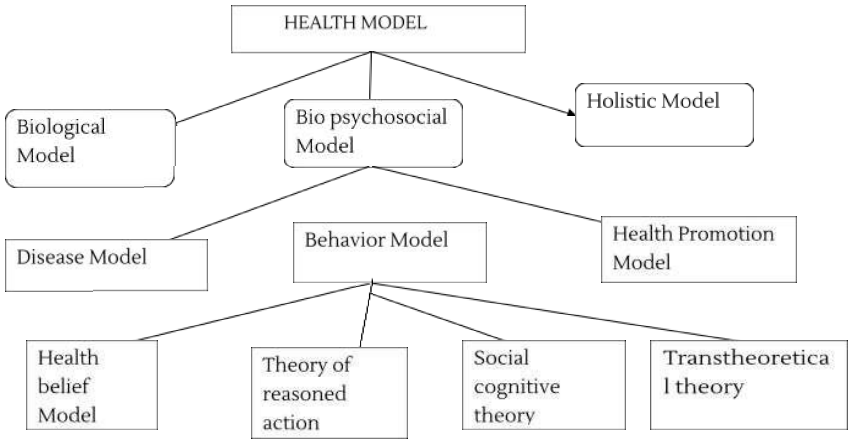
Moderate alcohol consumption has been linked to positive health outcomes. However, high alcohol consumption has been linked to a range of negative health outcomes including high blood pressure, heart disease and cirrhosis of the liver. High levels of alcohol consumption have also been associated with accidents, injuries, suicides, crime, domestic violence, rape, murder and unsafe sex (British Medical Journal 1982). While many of the adverse effects of high alcohol consumption are due to continued heavy drinking (e.g., cirrhosis of the liver, heart disease), others are more specifically related to excessive alcohol consumption in a single drinking session (e.g., accidents, violence).The General Household Survey (1992) reported that the average weekly consumption of alcohol in the UK was 15.9 units (1 unit=1 glass of wine, 1 measure of spirits, or 0.5 pints of beer) for men and 5.4 for women. In addition, 27 percent of men and 11 percent of women were drinking more than the recommended weekly sensible limits (21 units for men, 14 units for women). Heavy drinking is also more likely among younger age groups. In a survey of 12,000 Welsh adults, Moore (1994) reported that 31.1 percent of drinkers aged 18–24 engaged in binge drinking (i.e., drinking half the recommended weekly consumption of alcohol in a single session) at least once a week.

4. Relationship of Health Behaviors to Sociodemographic Factors

A clearer understanding of why individuals perform health behaviors might assist in the development of interventions to help individuals gain health benefits. A variety of factors have been found to account for individual differences in the performance of health behaviors. Demographic variables show reliable associations with the performance of health behaviors. For example, there is a curvilinear relationship between many health behaviors and age, with high incidences of many health risking behaviors such as smoking in young adults and much lower incidences in children and older adults (Blaxter 1990). Such behaviors also vary by gender, with females being generally less likely to smoke, consume large amounts of alcohol, engage in regular exercise, but more likely to monitor their diet, take vitamins and engage in dental care (Waldron 1988). Differences by socioeconomic status and ethnic group are also apparent for behaviors such as diet, exercise, alcohol consumption and smoking (e.g., Blaxter1990) .Generally speaking, younger, wealthier, better educated individuals, under low levels of stress, with high levels of social support are more likely to practice health protective behaviors. Higher levels of stress and/or fewer resources are associated with health risking behaviors such as smoking and alcohol abuse (Adler and Matthews 1994). Social factors seem to be important in instilling health behaviors in childhood. Parent, sibling and peer influences are important, for example in the initiation of smoking. Cultural values also have a major impact, for instance in determining the number of women exercising in a particular culture .For example, Steptoe and Wardle (1992) report that between 34 and 95 percent of women in their European student sample had exercised in the past 14 days.

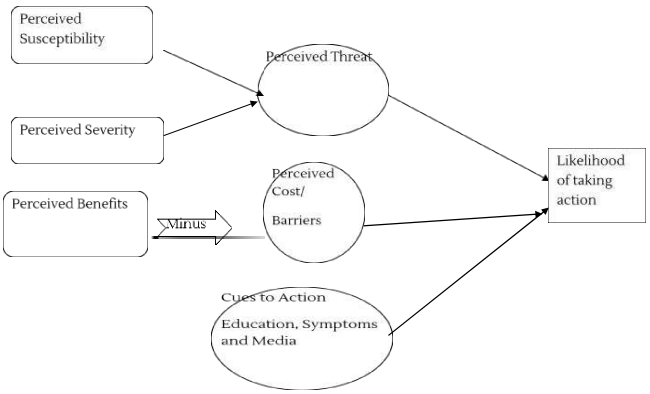
5. Health Models

Classification of Health Model



5.1. Health Belief Model

Health belief model was developed by Rosenstock, in 1974. According to this model, whether or not an individual adapts a health related behavior depends upon two kinds of cognitive appraisal and a triggering factor. According to this model, the likelihood that someone will take action to prevent illness depends upon the individual perception that they are personally vulnerable to the condition. The consequences of the condition could be serious. The precautionary behavior effectively prevents the condition. The benefits of reducing the threat of the conditions exceed the cost of taking action.



Perceived susceptibility-Refers to the probability that an individual assigns to personal vulnerability in developing the condition. The concept of perceived susceptibility has been found to be predictive of a number of heath protective behaviors .It is an appraisal of how threatening a health issue is based on beliefs about susceptibility (how susceptible am I to the disease)

Perceived severity-This refers to how serious an individual believes the consequences of developing the condition. An individual is more likely to take action to prevent disease if s/he believes that possible negative physical, psychological and social effects resulting from developing the disease pose serious consequences.

Perceived threat-The combination of perceived susceptibility and perceived severity constitute threat.

Perceived benefits-Refers to the benefits of engaging in protective behavior, motivation to take action. Changing a behavior requires the belief that the precautionary behavior effectively prevents the condition. This is an appraisal which evaluates behaving in ways to reduce the threat of the disease, based on the perceptions about the costs and benefits of the behavior. (What will it cost me to behave in a particular way, how much time, effort, money? Will this behavior makes me healthier, reduce my risk of the disease.)

Perceived cost-Refers to the barriers or losses that interfere with health behavior change. The combination of perceived benefits and costs constitute the notion of outcome expectation. Taking action involves cognitively weighing the personal costs associated with the behavior against the benefits expected as a result of engaging in the behavior.

Cues for action-

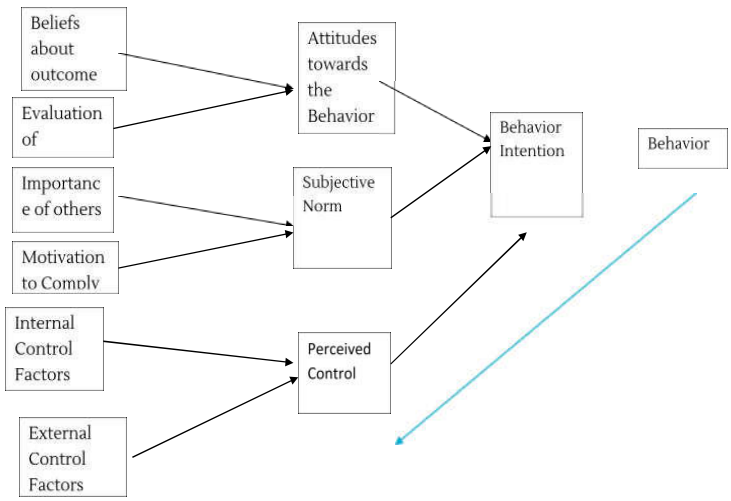
Involves stimuli that motivate an individual to engage in health behavior. The stimulus that triggers action may be internal or external. When perceptions of susceptibility and severity are high, a very minor stimulus may be needed to initiate action. Internal cues are physical symptom and external cues are mass media campaign, advice from others or the illness of a family member.

Example If an individual believed that she might end up with heart disease later in life (susceptibility) and believed that heart disease was a serious illness (Severity) and also thought that exercise would make her feel good and would reduce her risk of getting heart disease (benefits) and this would outweigh the cons of taking time and costing money (Barriers) then she would be more likely to take up some form of regular exercise. Further media campaign, remainders about the importance of regular exercise for health (cues to action) would increase the likelihood that she actually takes some action.

5.2. Theory of Planned Behavior

This theory was developed by Ajzen, 1991.This theory is an extension of the theory of reasoned action (Ajzen and Fishbein, 1980).Predicting behavior is the ultimate goal of theory of planned behavior.

Theory of Reasoned Action (Fishbein & Azjen, 1975)



This theory states that the main influence on behavior is an individual's intention to adopt that behavior. The behavior is influenced by the intention to perform behavior.

Intentions- in turn are influenced by two types of cognitions such as attitudes and subjective norm and by perceived control.

Attitudes-are the beliefs an individual holds towards the behavior and these are determined by beliefs about the outcome and the evaluation of the outcome.

Subjective norm-are determined by perceptions of social norms and social pressure (importance of other's attitude) and the motivation of the individual to comply with others.

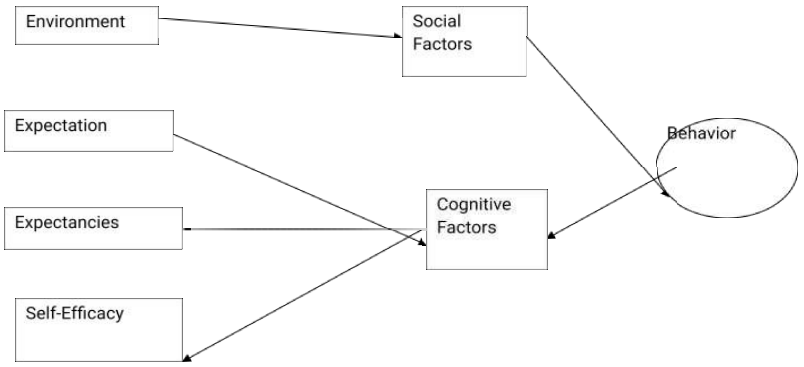
Perceived behavioral control-Is individuals perception of the ability to perform the behaviour,which is influenced by both internal and external control factors and this perception can influence both intentions and behavior directly.

Example

If an individual believed that cutting down on the amount of fatty food he ate would be good for his health (attitude to behavior), believed that other people in his life wanted him to cut down on eating fatty food s and was keen to meet these expectations (subjective norm) and also believed that he was capable of changing his diet (perceived control), this would predict a high intention to change his diet.

5.3. Social Cognitive Theory

Social cognitive theory was developed by Bandura .This theory includes individual factors, environmental and social factors in promoting health behavior. The person's perception of the environment will facilitate or inhibit behavior.



Social Factors-These are the social and environmental factors which influence the behavior.

Cognitive factors-These factors include;

(a).**Expectations**-are the ones anticipation of the outcome of a behaviour

(b).**Expectancies**-are the evaluation of the outcome of a behavior and

Self-Efficacy- which refers to the individual's confidence in one's own ability to perform a behavior.

5.4. Stage Models of Health Behavior- Changing Health Behaviors

Was developed by Prohaska and Diclemente, 1992.This model states that people go through stages while they are trying to change their health behavior. This model suggest that people use different cognitions and processes at different times during life style changes. Analyzes the stages and process people go through in attempting to bring about a change in behavior and suggested treatment goals and interventions for each stage. In this model, individuals are seen to go through five stages when they are attempting any life style changes namely,

- Pre-contemplation
- Contemplation
- Preparation
- Action and Maintenance

Precontemplation-This stage occurs when a person has no intention of changing his/her behavior. Many individuals in this stage are not even aware that they have a problem. The individual is not concerned and has no intention to change.

Contemplation-This is the stage in which people are aware of that problem exists and are thinking about it ,but have not yet made a commitment to take action. The individual vaguely consider about the change in the behavior.

Preparation-In this stage, individuals intend to change their behavior but may not yet have begun to do so. It is because, they have been unsuccessful in the past or they may simply delay the action. The individual intends and starts planning for an action.

Action-The action stage is the one in which individuals modify their behavior. Action requires commitment of time and energy for making a real change.

Maintenance-Is the stage in which people work to prevent relapse and to consolidate the gains they have made. This model states that individuals may take action, attempt maintenance, relapse, return to the precontemplation stage ,cycle through the subsequent stages to action, repeat the cycle again and do so several times until they have successfully eliminated the behavior.

The above models detail the key cognitive determinants of health behavior. To the extent that these models outline the key social cognitive determinants of health behavior, interventions which target these variables should lead to associated

changes in behavior. For example, the HBM would suggest that encouraging health behaviors is best achieved by increasing individuals' perceived susceptibility to negative health outcomes and making individuals aware of the severity of such outcomes. Such approaches have been commonly employed in health promotion messages. In addition, the HBM might suggest the need to focus on the benefits of health behaviors and the fact that barriers to action are easily overcome. However, there has been little systematic evaluation of their effectiveness, perhaps due to the common sense appeal of these approaches.

Relatively few studies have used the TPB as a framework for developing interventions, despite the fact that the theory would suggest a number of interventions focusing on different components of the model. Brubaker and Fowler (1990) did examine the effect of persuasive messages tackling behavioral beliefs upon men's intentions to perform testicular selfexamination in response to the threat of cancer. A persuasive message was found to increase intentions to perform testicular self-examination compared to a no message control. The TPB would also suggest the need to tackle normative beliefs and control beliefs in any attempt to change behavior. A number of studies have attempted to use persuasive messages aimed at tackling normative pressures. For example, in relation to preventing adolescent smoking, prevention programs commonly attempt to tackle the perceived pressure from teenage peers who smoke. Tackling control beliefs has been seen to bear many similarities to changing perceptions of self-efficacy Another interesting approach has focused directly on the immediate determinant of behavior in the TPB: intentions. Where individuals do have an intention to engage in a health behavior (goal intentions), but are having trouble implementing their intention, forming a specific plan about where and when to act has been found to help (Gollwitzer 1993). For example, Orbell Hodgkins, S and Sheeran, P. (1997) gave out a questionnaire about breast self- examination in response to the threat of cancer. Half the women were asked to indicate when and where in the next month they intended to perform breast self-examination (a specific plan or implementation intention). A one month follow-up found that 64 percent of these women had performed breast self-examination that month compared with only 16 percent of women who hadn't made an implementation intention, despite having similar goal intentions.

Several studies have focused on enhancing feelings of self-efficacy as a means for encouraging health behavior change. As Bandura (1997) outlines, there are four main sources of self-efficacy, each of which could be addressed in interventions. First, individuals can develop feelings of selfefficacy from personal mastery experience (e.g., it may be possible to split a behavior into various sub goals, such that the easiest sub goals are achieved before more difficult tasks are attempted). Second, individuals may develop feelings of self-efficacy through observing other people succeed on a task (i.e., vicarious experience). Third, it is possible to use standard persuasive techniques to try to instill feelings of self-efficacy. Finally, one's physiological state may be used as a source of information, such that high levels of arousal or anxiety may indicate to the individual that he or she is not capable of performing a given action (e.g., relaxation techniques may be employed to help maintain feelings of self-efficacy). Stage models have also been used as the basis for designing interventions. The main distinction from the approaches already presented is that this approach suggests that interventions need to be matched to the needs of each individual. So, for example, an individual at the pre-contemplation stage in relation to exercise needs to be made aware of the health problems associated with a lack of exercise. A different individual in the contemplation stage needs information about the pros of changing their exercise behavior and the cons of not changing. While an individual in the preparation or action stage needs helps with acting on their plans to engage in exercise. Whilst these ideas appear entirely plausible, to date relatively few studies have managed to demonstrate that such stage- matched interventions are more effective than presenting the same intervention to all individuals.

6. Conclusions

Health behaviors have important consequences for both the quality and length of life by influencing disease outcomes. Nevertheless, there is still considerable variation in those individuals who perform these behaviors. Social cognition models provide one approach to understanding the variation in who performs health behaviors. These models are also useful because they suggest ways in order to change health behaviors in order to improve health. Perhaps the greatest challenge for social and behavioral research on health behaviors is the demonstration that such theory-based interventions can produce effective and long-lasting behavior change that will lead to real health benefits for all individuals.

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