"The use of health care services by Pacific Islands people in New Zealand"

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Abstract

In a replication of Wolinsky and Johnson's (1991) study, data from 53 Pacific Islanders were used to examine relationships hypothesised in Andersen's behavioural model of health services utilisation, using additional measures of predisposing factors, enabling factors, need factors and the use of health care services. The findings revealed that the inclusion of extra measures did not improve the predictive utility of the model on two measures of health services use. The need variable of upperbody limitations proved to be a significant predictor of the use of other health professionals consulted by respondents. For other measures of services use, analysis of variance showed that these were related to need variables only. For utilisation patterns amongst the group, there were some evidence of problems with access to health services use through issues of accommodation, acceptability, and lack of familial resources. Bivariate analyses also showed gender differences in a number of health behaviours amongst this group. These findings are discussed with implications provided for future research.

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"It is not the consciousness of individuals that determines their being, but, on the contrary, their social being that determines their consciousness"

(Youngman, 1985)

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1. Introduction

1.1 Health Care: Contemporary issues:

Health care services in many developed countries have come under critical scrutiny in recent years. In New Zealand, we have seen how our health system has evolved from one based on need to the ability to pay (Bowie & Shirley, 1994). Previously, the government - via the Welfare State - had taken full responsibility for the provision of universal and equitable primary health services for all New Zealanders following the Depression in the 1930s (Jamieson, 1992). In its current form, however, the health system has become a market-driven system characterised by the New Right ideology, which strongly believes in the superiority of markets over governments, of competition over co-operation, and self-reliance over community responsibility (Ashton, 1995; in Seedhouse, 1995). The basic assumption behind the New Right ideology is the individual freedom to compete in the unfettered market; and this means, when opportunities are up for grap, the highest bidder will always win. However, whilst equality in individual choices is implicated here, individual differences on moral grounds (eg disability) are not taken into account. This was reflected in public concern over the abandonment of any commitment to an egalitarian society by the government, as summed up by Boston and Dalziel (1992) who note that:

> *"important values such as human dignity, distributive justice, and social cohesion, have been given second place to the pursuit of efficiency, self-reliance, a fiscal balance, and a more limited state" (p.ix).*

Despite this concern, the proponents of the market model argue that the introduction of more business-like arrangements and greater competition into the health services in New Zealand, as in elsewhere, is in accord with these economic and social trends (Ashton, 1995, in Seedhouse, 1995). Increases in public expenditure that have funded most of the health services inevitably lead to more pressure on the governments to seek control of public spending (Appleby,1992). There has also been a perception that resources allocated to health services are not always deployed in an optimal fashion; and thus, when the scope for increasing expenditure is extremely limited, there is a need to look

for ways of using existing budgets more efficiently. Ham (1994, in Saltman & Von Otter, 1995), notes a number of fundamental developments which underpin the above concerns, and which have significant bearing on health services performance. Firstly, there are demographic changes, including the ageing population and the decline in the proportion of the population of working age. These changes will both increase the demand for health care and at the same time limit the ability of health services to respond to this demand. Secondly, advances in medical science will also give rise to new demands within the health services. Advances in surgery, drug therapy, screening and diagnosis, will have significant implications for funding and provision of services. Thirdly, public expectations of health services are rising as those who use services demand higher standards of care. This is stimulated by developments within the health service, including the availability of new technology. More fundamentally, it stems from the emergence of a more educated and informed population, in which people are accustomed to being treated as consumers rather than patients.

Against this unrest, however, is a central issue of access, or more accurately, lack of access to health care for various groups on an equitable basis (Saltman & Von Otter, 1995). Health status is a primary factor in the determination of the need for health care services (Penn, Kar, Kramer, Skinner & Zambrana, 1995). In particular, health status by way of measurement, is often operationalised by rates of sickness and death. Sickness and death per se, are often assumed as primarily biological in nature simply because of their inevitability. However, biological reasons do not explain the disproportionate incidence of mortality and morbidity amongst the poor and the less fortunate. As Waddell & Petersen (1994) asserted, sickness and death are not solely distributed according to biological laws - rather, they are tied into the very socially unjust fabrics of our society. In other words, disparities in morbidity and mortality can be explained by the way we live with each other, the value decisions our governments, churches and businesses make in their day-to-day political and economic activities, and the priorities health officials set as they go about their duties.

Similarly, health behaviours are often viewed as matters of personal choice. For example, the New Right view of health care as made explicit by the Treasury states that:

> *"the relevant point for policy analysis is that most of the matters that can influence the health of individuals are beyond the control or effective influence of the government. These are matters which are best understood as being within the area of private choice. Any policy goal in the health area must take account of the fact that health status can be significantly influenced by private processes and must grapple with the need to encourage people to make lifestyle choices which take account of future risks"*... (Treasury, 1987; in Spicer, Trlin, & Walton, 1994; p222).

Yet, people do not choose to be ill or oppressed. Since health status is largely a reflection of class, race, sex, and the environment (Bunkle, 1994), personal choice in health for most people, is, at best, very circumscribed. The New Zealand review of the link between socio-economic factors and health status, clearly shows that such variables as: income, education, social class, unemployment, housing, ethnicity, gender, family structure and area of residence, all make significant contributions to inequality of health status in the general population (Public Health Association, 1992). Most of us would choose a stress-free lifestyle, but few of us can have one. Thus, the New Right view holds people responsible for things most are powerless to change.

There is also evidence that the social distribution of health behaviour is dependent on cooperative efforts by the state and powerful economic interests (Johnson et al., 1995). The very existence of the alcohol and tobacco industries, the price and availability of their products, and profitability, are due to specific state action or interaction with the significant powerful others. More retail outlets means greater public access to alcoholic beverages, and this in turn, may serve to reinforce a positive association between availability and consumption.

The need to use alcohol and tobacco is also rooted in social structures (Johnson et al., 1995). Social and economic deprivation create adverse living conditions from which people attempt to escape. Thus, tobacco and alcohol are mood-altering agents frequently used to provide relief from the personal suffering that is induced by social structures.

The recognition, therefore, that health status and utilisation of health services varied significantly depending upon one's income, race, culture, and geographic location, was an

important factor in support for the notion of expanding health care programmes for the poor and other vulnerable population groups (Davis, 1991; Spector, 1991). Not surprisingly, the increased emphasis on equal opportunities and social welfare, means that access to health care has since been recognised as a human right (Holtzman, Evans, Kennedy, & Iscoe, 1987). In fact, this recognition has led the World Health Organisation (WHO) to set forth the goal of the attainment by all peoples of a level of health that will permit them to lead a socially and economically productive life (Funkhouser & Moser, 1990). Like the practice of Medicaid and Medicard in the United States, the introduction of Community Services Cards in New Zealand is one of the measures put in place specifically for this purpose. However, merely having insurance and other sources of health care do not assure access to needed health services. For example, problems with access to health care amongst the insured working-age adults have been reported by Hayward, Shapiro, Freeman, & Corey (1988, in Funkhouser & Moser, 1991). Slivinske & Fitch (1992) also found in their study of the elderly that simply possessing health care coverage was not a sufficient condition to predict services use. In any case, the United States experience suggests that in a market-dominated health-care system, where insurance and direct payments are the main methods of financing, there is significant inequality of access to and utilisation of health care (Appleby, 1992). In other words, depending on individuals' incomes and health states, there is variation in the quantity and quality of health care to which individuals are able to gain access.

With the above concerns in mind, this thesis - in focusing on a Pacific Islands sample - will address the issues of access to, and utilisation of health care services by this particular group. Accordingly, the rest of the introduction section will be set out as follows: First of all, I will describe the concept of access in relation to health care use. Secondly, Andersen's model of health behaviour, which will be tested in the present study, will be discussed. A literature review of this model will follow. Third and finally, a rationale for studying this particular population will be provided. This will include issues such as what is currently known about the targeted group; what and why is it important to examine such a population or group.

1.2 The Concept of Access:

In New Zealand, the concern with access to health care is not new. The health reforms which resulted from the Upton 1991 Green and White paper - and before that from the Gibbs Report (Campbell, 1995) - heralds the beginning of a new era, marked by a "shift" of responsibility from the Welfare State to the individual. Despite this radical shift, however, one of the major objectives remains: to improve access for all New Zealanders to a health-care system that is effective, fair and affordable (Campbell, 1995). In a survey of a random sample to see what health research priorities in New Zealand should be, Crompton (1993) reported that access to health care was the main priority for people who responded.

What, then, is access in relation to health care? The concept of access is an important entity in health policy and health services research; yet it is not well defined. While some authors refer to access as entry into or use of the health services, others see it as characterising factors influencing entry or use. Wan (1972, in Fosu, 1989), for example, refers to access as a multifaceted concept which involves awareness (that one's condition needs medical intervention), availability of services (time and distance), acceptability (trust and willingness to use such services), and affordability (income and time). For our purpose, however, access is defined here as a general concept which represents a set of specific components describing the degree of "fit" between the client and the system (Penchansky & Thomas, 1981). These components are availability, accessibility, accommodation, affordability, and acceptability. Availability refers to the relationship between existing services and the client's needs in terms of volumes and types. This relates to the adequacy of the supply of services by providers. Accessibility is the relationship between locations of the supply and the clients with emphasis on client's transportation resources, travel time, distance and cost. Accommodation represents the manner with which services are organised to accept clients (eg appointment systems, hours of operation), and the client's ability not only to comply to these, but also to perceive their appropriateness. Affordability refers to the relationship of the costs of services and the client's income or ability to pay; thus health insurances and community cards are included in this dimension. Acceptability or the trust and willingness to use

such services, refers to the relationship of the client's attitudes toward the service provider, as well as the provider attitudes about what is acceptable to the client.

In validating these seemingly overlapping constructs, Penchansky and Thomas used the interview data on patient satisfaction to examine their discriminant validities. Indeed, it was found that differences do exist amongst these five dimensions, and that the measures do relate to the concept of access (Penchansky & Thomas, 1981).

1.3 Theoretical Model:

In examining access to, and the use of health care services, studies have often used Andersen's behavioural model (Andersen, 1968) as a basis for a conceptual framework, because it is one of the preferred models within which demand for health care services has been assessed (Hulka & Wheat, 1985; Wan, 1989; Wolinsky, Aguirre, Fann, Keith, Arnold, Niederhauer, & Dietrich, 1989; Wolinsky & Johnson, 1991). This model has since been revised by Andersen and his colleagues (Aday & Andersen, 1975; Aday, Andersen & Fleming, 1980; Andersen & Newman, 1973), as well as other authors (eg Penning, 1995; Wolinsky, 1990). However, in a recent review, Andersen (1995) has reiterated the point that whilst there is certainly room for improving the model's predictive power, its basic infrastructure remains:

> *"that people's use of health services is a function of their predisposition to use services; factors which enable or impede use and their need for care". (Andersen, 1995, p1).*

Thus, the utilisation of health services is determined by three sets of factors: predisposing, enabling, and need factors. The predisposing factor is based on the idea that some people have a greater inclination for using health services than others, and that these inclinations can be predicted from the individual's characteristics prior to the onset of illness. The predisposing factor has three dimensions namely demographics, social structures, and health beliefs. The demographic dimension is typically measured by age, sex, marital status, and family size - all of which are indicators of the individual's relative life cycle position. These demographic factors have been identified as somewhat related

to the use of health care services in some ways. For example, age and sex represent biological imperatives suggesting the likelihood that people will need health services (Hulka & Wheat, 1985). Being married is consistently associated with better health, and thus, married persons utilise health services far less than the non-married (Evashwick, Rowe, Diehr, & Branch, 1984; Morgan, 1980; Mutchler & Burr, 1991; Verbrugge, 1979). Women have been shown to use health services more than men (Kandrack, Grant, & Segall, 1991), and have greater longevity than men (Waldron, 1976; Wan, 1989; Wingard, 1982; Wolinsky & Johnson, 1991).

Social structure, the second predisposing dimension, is measured by a wide array of factors that determine the status of the individual in the community, his/her ability to cope with presenting problems and commanding resources to deal with these problems, and how healthy or unhealthy the physical environment is likely to be (Andersen, 1995). The relationship between social structure and health services use is commonly measured by employment, education and ethnicity; and various links of this nature have been established. For instance, levels of education are related to both employment types and socioeconomic status achieved, which in turn have been found to have an inverse relationship with the use of health services (Corney & Murray, 1988). Differences in health behaviours have also been found to relate to ethnicity (Keith & Jones, 1990; Leclere, Jensen, & Biddlecom, 1994; Mutchler & Burr, 1991; Schur, Bernstein & Berk, 1987; Wolinsky et al., 1989), with different groups dealing with illness in different ways based on their respective beliefs and cultures.

Health beliefs comprise the third dimension of predisposing characteristics. These are attitudes, values, and knowledge that people have about health and health services that might influence their subsequent perceptions of need and use of health services. For example, those who value health highly would exhibit different utilisation patterns than those who placed low value on their health (Andersen & Newman, 1973). Attitudes toward the efficacy of medical treatment, how personal health is maintained, and locus of control (internal versus external) over health, have also been seen to affect health services utilisation. For instance, evidence for low rates of professional consultation amongst individuals who doubted the benefits of medical science have been reported by Dean (1986). Sanders (1982) also noted that those who believe in their own actions, and

hence, exercise control over their own destiny (internal locus of control) are more likely to seek professional advice than those who do not believe in themselves (external locus of control). Health beliefs, as Andersen (1995) points out, provide one means of explaining how social structure might influence enabling resources, perceived need, and subsequent use. These three dimensions of the predisposing factor then, are assumed to represent the sociocultural component of the behavioural model.

Although the individual may have the predisposition to use health services, s/he must also need to have some means of obtaining them. This component of the model is known as the enabling factor. The enabling component, therefore, includes those factors which make health services available to the individual. These factors are often classified in two ways: familial resources and community resources. Familial resources, as typically measured by income, the presence of health insurance, having a regular source of health care and telephone access, is used to reflect the extent to which the individual is self sufficient or able to provide for themselves. Community resources, on the other hand, are used to mirror the availability of health care services (Cafferata, 1987; Eve, 1988; Wolinsky & Johnson, 1992; Wolinsky et al., 1989). These are usually measured by physician/hospital bed to population density ratios, as well as geographic location. Taken together, these two dimensions of the enabling factor which embody the economic component of the behavioural model, may also represent Penchansky & Thomas's (1981) access features that enable or hinder services use. To revisit this point, five different facets of access as have been defined by Penchansky and Thomas are: affordability, acceptability, accessibility, accommodation and availability. To be sure, while affordability and acceptability are associated with familial resources, availability, accommodation and accessibility correspond to community resources.

Both predisposing and enabling factors are essential conditions for health services use; however, they, by themselves, are not sufficient. To be able to utilise health services, the individual must have a purpose or need for doing so. As Wolinsky, Coe, Miller, Prendergast, Creel, & Chavez (1983) noted, need serves as the foundation for services utilisation when suitable levels of predisposing and enabling factors are present. Thus, need characteristics - the third component of the model - is specified as the most immediate cause of health service use, and has two dimensions. The first represents the

amount of illness that an individual perceives exists, and is typically measured by a self-reported global measure of health status. The second dimension, in contrast, represents professionally evaluated need such as ratings by a physician. As these are not readily available at all times, measures of activity limitations, especially those involving the basic activities of daily living, are used as proxies of physicians' assessments of such limitations. These have been shown to yield more objective assessments of need than perceived health (Wolinsky et al., 1989; Wolinsky & Johnson, 1991; 1992), which yield a more global and subjective evaluation. These indicators of need tap the individual's recognition that an illness either exists, or is in the making.

The last component of Andersen's model is the actual use of health services. According to Andersen, people's use of services can be either discretionary or non-discretionary in nature. Discretionary use of services refers to the idea that, whether or not services utilisation eventuates is the property of individual choice - that is - self initiated. Thus, the decision of when an illness or injury is serious enough to seek professional advice is discretionary in nature. Discretionary use of services is perceived as strongly related to personal values, income and education. Non-discretionary, on the other hand, refers to the idea that the use of health services is based on disease or initiated by others, and related more to professional appraisal of health need. Thus, hospital admission, or a client's referral from the family physician to the psychologist - since these decisions are made by health professionals - are considered non-discretionary in nature. Wolinsky et al., (1989) noted that since discretionary use of services is seen as a function of the individual, predisposing and enabling characteristics are expected to play major roles in predicting this health care utilisation type of behaviour, rather than the need factor.

Health care utilisation is operationalised in two forms - formal and informal use of services. Formal utilisation of health care are traditionally measured by the number of physician contacts, hospital contacts, nights hospitalised, outpatient and emergency contacts - all within a specified timeframe such as in the past 12 months. Informal use of care, in contrast, are often measured by the number of days spent in bed due to ill health (Cafferata, 1987; Mechanic, 1979; Wolinsky et al., 1983); as well as the use of home health services such as meal delivery service and visiting nurse (Wolinsky & Johnson, 1991; 1992).

The behavioural model, then, incorporates indicators of social position, possession of sufficient resources, and subjective evaluation of the need for care in an attempt ..."to discover conditions that either facilitate or impede services utilization"... (Andersen, 1995, p4). In Andersen's (1968) terms, equity in access to health services occurs when demographic and need variables account for most of the variance in utilisation. Alternatively, inequitable access occurs when social structure (eg ethnicity), health beliefs, and enabling resources such as income, determine who gets medical care. The distribution of these factors, however, is known to differ by race and ethnicity (Keith & Jones, 1990).

1.4 Literature Review:

The dynamics of Andersen's behavioural model are well documented in the overseas literature especially with reference to various groups such as women (eg Cheng, 1992; Eve, 1988), the elderly, and Blacks (eg Jewett, Hibbard, & Weeks, 1992; Keith & Jones, 1990; Mutchler & Burr, 1991; Penning, 1995; Wolinsky & Coe, 1984; Slivinske & Fitch, 1992; Wolinsky et al., 1989), Wolinsky & Johnson, 1991; 1992), and a range of predictors of health services utilisation have been noted. For example, Wolinsky et al., (1989) found that need characteristics are primary determinants of health service use and stronger predictors of the demand for physician services for the minority elderly, than for the majority elderly. They found that, compared with White Americans, the need differentials for African Americans, Puerto Ricans, Cubans, and Mexicans explained 2.6 - 3.5 times the variance in physician contacts, and that Puerto Ricans and African Americans have longer average annually aggregated lengths of hospital stays.

Similar findings were reported by Mutchler & Burr (1991) who investigated the relationship between socioeconomic status and health differences between Blacks and Whites. These authors found that even after accounting for differences in socioeconomic status, Blacks self-rated health is poorer than that of Whites. Blacks report more visits to the health care professionals but spend fewer nights in the hospital when levels of health and economic resources are controlled for - suggesting some effect of race. These results are consistent with other studies showing that health status and health care service

utilisation levels are strongly associated with socioeconomic status (eg Nelson, 1994; Scott, Shiell, & King, 1996; Slivinske & Fitch, 1992).

Keith & Jones (1990) also looked at the frequency of physician contact, hospital contact, and nights hospitalised to examine determinants of health services use amongst the Black and White elderly. The findings showed some support for differential effects, especially in the case of physician contact. Here, the probability that Blacks see a physician is related to being widowed, living alone, residing in rural area, and perceived health status. For Whites, in contrast, perceived health status is the most influential variable in determining a physician visit. Further, neither resource factors such as health insurance nor psychological well-being were predictive of service use within the Black population.

In New Zealand literature, one of a few studies to have adopted this conceptual framework in examining relations between access factors (ie affordability, accessibility and accommodation) and utilisation of general practitioner services, was carried out in a South Auckland general population by Gribben (1992). Three significant predictors of services use identified in this particular study were perceived health status, time going to current doctor (negative association), and waiting times. Long waiting times (accommodation) were associated with decreased utilisation; and, a high percentage of respondents (30%) claimed that dissatisfaction with doctors' fees (affordability) has stopped them from going to the doctor, although this was not related to services use. The accessibility factor, via mode of travel and travelling time to the doctor, was not associated with utilisation. The finding that health status is the strongest predictor in health services utilisation, suggests that need characteristics drives the system, and this is consistent with findings elsewhere as noted in the literature reviewed above.

This consistent finding, in particular, is an obvious problem amongst studies of health services use, in that, typically, only a small percentage of variance in the use of services is explained, and that when the effects of need variables are taken into account, the effects of predisposing and enabling variables are small. In an attempt to resolve some of these problems, Wolinsky & Coe (1984) suggested two possible explanations for the low predictive utility of the model: First, previous studies used imprecise measurements of the independent variables, especially indicators of health beliefs and health status.

Second, they asserted that local, regional, or state data sets may have caused some distortions in the identification of significant effects of the predisposing, and enabling factors. They also suggested that there is a need to assess the possible effects of adjusting the non-normally distributed health services utilisation measures.

In assessing these possibilities, Wolinsky & Coe (1984) used the 1978 Health Interview Survey to examine the effects of predisposing, enabling and need characteristics on the volume of physician and hospital use. The major emphasis in this study, however, was to see if the parameters of Andersen's model estimated in these national data differed substantially from those estimated in prior regional applications of the model. They also wanted to assess the effects of these parameters and R-square estimates when measures of physician and hospital utilisation are adjusted for non-normality.

A comparison among the actual, truncated, and the logarithmic transformations of the actual volume of physician and hospital use, showed evident change in the magnitude of explained variance when the actual volume was truncated. The R-squares of the logarithmic transformations of actual volume was also greater than those of truncated volume. These authors concluded that, explained variance reported in previous studies were not due to the nature of the data set, because even when using national data, much of the variance in utilisation is not explained. Need factors, however, still accounted for the most variance in comparison to predisposing and enabling factors. It is also evident that, when analytical adjustments are introduced (ie truncations or logarithmic transformations), significant increases in the predictive utility of the model are noticed. Wolinsky and Coe, however, do caution that although such statistical transformations are justifiable and appropriate, they may fail to address the more important conceptual issue, which is that the model does not appropriately explain use for heavy users of health care services; it is only appropriate for modest users. If heavy users in this context are equated with age, then Wolinsky and Coe's assertion is consistent with findings in other studies which have shown that Anderson's model explains more of the variance in health care use of the general population (eg Aday & Andersen, 1975; Aday Andersen & Fleming, 1980; Andersen, 1968; Wolinsky, 1978), and less so when applied to the elderly (eg Branch, Jette, Evashwick, Polansky, Rowe, & Diehr, 1981; Eve & Friedsam, 1980; McKinlay, 1985; Wolinsky et al. 1989).

In a similar move, Eve (1988), in a longitudinal study of older women, also addressed this problem by testing the prediction that information on previous health status and past use of health services will increase the percent of variance explained by the service utilisation framework over the amount that can be explained by current predictors alone. Four utilisation measures used were the number of physician visits in the past year; the number of times hospitalised in the past year; the number of nights hospitalised in the past year; and whether or not respondents had to put off needed care in the previous year. The results showed that previous use and previous health status variables were significantly related to all four of the measures of current use of health services. The increase in the amount of variance explained by current predictors in number of physician visits was almost twofold, while the increase in having to put off health care was more than double. The amount of variance explained in number of hospital episodes, and in number of hospitalised nights was also increased by approximately one-third. Despite these increases, however, it was generally acknowledged that the R-squares are still relatively low (Eve, 1988).

More recently, Wolinsky & Johnson (1991), in addition to traditional indicators of predisposing, enabling, and need factors, have expanded the model by looking at information about the personal, economic and health status characteristics to examine utilisation patterns of an elderly population. Thus, measures of multigenerational living arrangements, social support (kin and non-kin), health worries and health control, health insurance coverage, residential stability, and several multi-item scales of functional limitations were included in the hope of enhancing the predictive utility of the model. The results showed that the expanded model did clarify several of the relationships with the use of health services such as how informal services may substitute for more formal services; or that the incorporation of prior use patterns may enhance the fit of the model and allow an examination of traditional factors on changes in health care use over time. However, these improvements in measurement did not enhance the robustness of the model, and that, need characteristics proved to be major determinants of health services utilisation (Wolinsky & Johnson, 1991).

Given the common finding that needs dominates both predisposing and enabling factors in the predictive utility of the model, one may argue that if health services utilisation are

purely based on needs alone, then the health system may well be characterised as being equitable. Further, since predisposing and enabling factors have only minimal effects, there may be no need for targeted interventions. Wolinsky and Johnson (1991), however, warned that, since most of the variance in services use remains unexplained, we do not really know what accounts for most services utilisation. Moreover, the need characteristics, as has been noted, have different effects for different groups (eg Wolinsky et al. 1989; Keith & Jones, 1990; Harada & Kim, 1995). In fact, Wolinsky & Johnson (1991) reported that the minority adults' use of health services is far more restricted by and sensitive to the need characteristics than those of the majority adults. In general then, three major research findings regarding the efficacy of Andersen's model in conceptualising health care utilisation can be summarised as follows: 1) need characteristics are major determinants of health services utilisation; 2) the amount of variance explained by the model is less than 30%; and 3) the effects of predisposing and enabling characteristics are less than 10% of the variance (Wolinsky & Arnold, 1988; Wolinsky et al., 1989).

1.5 Rationale:

Research interest in health care utilisation has proliferated since Hart's "inverse care law" proposed that it is often the case that those with the greatest need for health services have the least available (Hart, 1971). This proposition which represents the availability dimension of access has been confirmed in the New Zealand context (eg Clarkson, Romans-Clarkson, Walton, & Mullen, 1988; Salmond, 1974). Other related areas of access to health care services which have recently received empirical scrutiny in New Zealand include the appropriateness (or otherwise) of services (Lunt & Brown, 1993); satisfaction with access to General Practitioner services (Gribben,1993); and the influence of increased health care costs of General Practitioner consultations and prescription collection (Dixon, Watt, Thomson, Lewis, Crane, & Burgess 1994).

Whilst the above studies have all reported some discrepancies in the health system, they nevertheless shared common limitations. First, since they have all concentrated on one or another particular aspect of access, the findings therefore cannot be taken to reflect a

wider picture of access to health care services. Second, by focussing on the health system per se, the individual health-seeking behaviour, or factors involved in one's decision making process to seek (or not to seek) health care have not been addressed; and thus, the findings represent only one side of the picture. Third, the sampling populations in most of these studies are often treated as homogeneous in nature. Yet, given the multicultural nature of New Zealand, relatively little is known about the utilisation patterns or health seeking behaviour of various groups in the population. In studying access to, and utilisation of health care services, the experiences and situations of different ethnic groups which both constitute and/or contribute to New Zealand society must be taken into account. Moreover, like age, gender and socio-economic positions, the importance of ethnic or cultural groups as an entity in determining health status has been increasingly recognised internationally (Public Health Commission,1994).

One such ethnic group which deserves to be considered in light of the above is Pacific Islands people. For clarity's sake, the notion of Pacific Islands group or population is an umbrella term which collectively embodies or identifies people from seven distinctive ethnic groups of the Pacific namely Samoa, Tonga, Cook Islands, Tokelau, Niue, Fiji, and Tuvalu. It also comprises people from Melanesian countries of Papua New Guinea, Vanuatu, Solomon Islands and Kiripati as well as countries from Micronesia (Public Health Commission, 1994).

How accessible are health care services to Pacific Islands people? What factors influence the use of health services by this group? Are determinants of health services utilisation for this group the same or different from those of other groups? The lack of empirical evidence is a concern because little is known about the health behaviour of Pacific Islands people; yet, it is one of the fastest growing ethnic minority groups in New Zealand. At the 1991 census, Pacific Islands people constituted five percent of the population. By the year 2031, it is estimated that the Pacific Islands population will have grown by 114 percent and constitute 7.2 percent of the total population (Krishnan, Schoeffel, & Warren, 1994). As a young population at present compared with the national population, it is projected that Pacific Islands population in the 25-65 age group will increase by 65 percent between 1991 and 2031; and the population over the age of

65 years will increase by 150 percent (Public Health Commission, 1994). Some of the contributing factors to this estimation include: higher fertility rate amongst Pacific Islands women; births to non-Pacific Islands women when the father is of Pacific Islands origin; the relatively large proportion of Pacific Islands people in the main reproductive age groups; and the net migration from the Pacific Islands (Department of Statistics, 1993b; in Krishnan et al., 1994). A major consideration here is that it is inevitable that the health needs of Pacific Islands people will also grow.

The Public Health Commission (1994) - after discussion with various Pacific Islands communities nationally - have reported what Pacific Islands people perceived as barriers to access to, and utilisation of primary health care services. These include language and cultural barriers, problems with affordability of services, and for some, personal health is rated low on their list of priorities.

Language is a major problem. Underrepresentation of Pacific Islands people in the health profession inevitably means that Pacific peoples are often served by professionals of other ethnic backgrounds. This may lead to difficulties in describing problems thoroughly or accurately. Alternatively, literacy may not necessarily guarantee comprehension of instructions or advice given. When people have to rely on relatives rather than trained interpreters as a means for communication, information is often lost or changed (eg Hawthorne, 1994). Not surprisingly, such difficulties may discourage Pacific peoples from utilising services. Similarly, the absence of language appropriate information about health care and health services in Pacific Islands languages, adds to Pacific people's lack of health awareness, not knowing where to seek help, and/or what the general benefits of acquiring health knowledge are about.

Problems with cultural differences also emerge when Pacific Islands people see a nurse or general practitioner of different ethnicity. For example, when discussing sensitive issues such as sex and/or other medical problems that require physical examination, Pacific Islands people often feel "shy", "uneasy", and "uncomfortable". The body is often perceived as "sacred"; and therefore, exposing it to a stranger is considered culturally inappropriate. Thus, when people do not turn up for such appointments, it is often the case that they are simply avoiding embarrassment. One way to deal with such problems

is to genderise the situation - that is - the male patient to see the male doctor; and the female patient to see a female doctor.

Cultural values also mean perceiving some things as more important than personal health. The church for instance, is an integral part in maintaining spirituality in Pacific Islands cultures; (spirituality here refers to people's relationship to God, to other people, to their ancestors, and things in the environment that make up their heritage such as land and trees.). As such, monetary contribution to the church is important. Similarly, sending money to their families in the islands can be seen as a way of maintaining one's connectedness to their family or their sense of belonging. One significant factor which may underpin people's drive to such commitments as the maintenance of family ties or church involvement, is in line with the Pacific Islands view of health as holistic in nature, and one which perceives health as constituted of three overlapping components - spiritual, mental and physical. It can be argued that for some, maintaining the spiritual aspect of health would have priority over and above their physical health. This may also explain why some people have first preference for traditional Pacific Islands healings, and visit a doctor only if these are ineffective.

Another barrier to health services is the high cost of general practitioners. Because census data shows that the majority of Pacific Islands people are on low income or unemployed (Department of Statistics, 1991), they will not seek attention unless the pain becomes unbearable. It has been noted that many visit the doctor only as a last resort, and do not have regular checkups. Prescriptions may also not be taken because of high costs (Public Health Commission, 1994).

On the political front, the impact of the government's policies on the health and well-being of ethnic minorities such as Pacific Peoples is apparent. For example, the introduction of tax cuts in July, 1996 - as made explicit by the Prime Minister - was essentially a measure that specifically targets "middle New Zealand". If middle New Zealand in this context refers to the employed or the middle class, then those outside these categories such as the unemployed or the underclass are more likely to be further disadvantaged; and a significant proportion of Pacific Islands people are in this group. Yet, people, in most cases, do not choose to be unemployed.

Similarly, the social reforms have been criticised because of their relationship to the growth of poverty in New Zealand, especially in low income families. For example, Waldegrave and Sawrey (1993), in an examination of housing situations in New Zealand, found that whilst 40% of the total of those with housing needs were Pakeha, the results indicate that Maori people were nearly 2.5 times more likely to face serious housing needs when compared to their percentage in the total population (ie. 12.9%; Department of Statistics, 1991). However, Pacific Islands people, are four times more likely to face serious housing needs, when compared with their percentage in the total population (ie. 5%; Department of Statistics, 1991). Stephens, Waldegrave and Frater (1995), also found that the incidence of poverty is more than 2.5 times greater amongst Maori and more than 3.5 times greater amongst Pacific Islands families, than it is amongst Pakeha families.

These findings are also reflected in the link between the socio-economic environment and health of Pacific Islands people as reported by the Public Health Commission (1994), and one which includes the followings: First, the Pacific Islands labour force has a high unemployment rate of 23 percent compared with 9.5 percent for the total New Zealand labour force in March 1994. Second, unemployment in this population is concentrated amongst young people aged 15-34. In any case, since the 1991 census, Pacific Islands people made up 7.1 percent of the unemployed [ie 11,607 of 163,770], (Department of Statistics, 1993a; in Krishnan et al., 1994). Third, nearly 80 percent of Pacific Islands income earners have income less than $20.000 per annum, compared with 64 percent of income earners in the total population. When we examine the break down of income levels, the 1991 Census reveals the following: Fifty-three percent of Pacific Islands people receive a benefit. The average income for the Pacific Island female was $11,000 compared with her Pakeha counterpart who earned $14,000 on average. For males, the Pacific Island average income was $14,500 compared with $23,940, the average income for the Pakeha male. For health, the first admission rate for the diagnosis of schizophrenic psychosis for Pacific Islands people is nearly twice the national average rate (Department of Statistics, 1991).

In general, it is obvious that the reported under-utilisation of health services brought about by a variety of personal, social, political and cultural reasons, may mean that

Pacific Islands people do not seek health services as early as, or to the same extent as, other groups and therefore, are more likely to be hospitalised when they do present for attention (Public Health Commission, 1994).

Given the above discussion then, an insight into the health behaviour and utilisation patterns of this population is thus critical, if we are to identify equitable, appropriate, and effective means of providing health care services that take into account the uniqueness and diversity of health needs of ethnic groups in our society. It is imperative therefore, that, given the user-pays and consumer-provider reformed nature of our health system, there is a pressing need to document what is currently known, and to begin to chart the direction for much needed research on health behavioural patterns of Pacific Islands people. This will permit identification of barriers (if any) to services to be made, and hence, the detection of factors which may need a policy response to ensure that the health needs of such groups are sufficiently dealt with. Such data, moreover, will allow comparisons amongst heterogeneous groups to be made, to enable conclusions to be drawn as to whether or not our health system does cater for the population as a whole, or whether it favours only a particular sector of the population. In short, data from various ethnic groups are much needed for the development of models (to investigate relations between health care utilisation and health care needs) that take into account the heterogeneous nature of the New Zealand population. Indeed, the present endeavour is the first step towards this goal.

2. Additional Constructs for the Study:

Extra constructs will be investigated in the present study and the reasons for this are outlined below.

2.1 Life Events and Social Contacts:

Recent studies of the elderly have demonstrated that the inclusion in their analyses of variables such as social support (Nelson, 1994; Penning, 1995); activities of daily living

(Wolinsky & Johnson, 1991; 1992); and stressful life events (Cheng, 1992), did show some improvement in the explanatory power of Andersen's model. These variables which reflect the individual's psychosocial reality, are seen as more important in the elderly population (Wolinsky et al., 1983; Wolinsky et al., 1989; Cheng, 1992), perhaps because of the possible decline in their functioning capacity, and hence, the decrease in ability to deal or cope with stressors of daily living. It is argued here, however, that it may be equally important to consider the psychosocial experience of other groups in relation to the use of health services because, significant events encountered in people's lives and resultant consequences will always affect human nature in one way or another. Life events, for example, are deemed stress-producing according to the degree of helplessness experienced by the individual, and the consequence of "giving up" has been postulated as a final common pathway to changes in health, irrespective of age, gender, or ethnicity (Lieberman & Jacobs, 1987, in Goldberg & Novack, 1992). Given the social, political, and economic realities of marginalised groups such as Pacific Peoples, the impact of these factors in relation to their health seeking behaviour should therefore be documented, as possible implications may well be important for determining health policy.

2.2 Psychological Distress and Psychological Well-being :

There is also an ongoing debate about the relationship between mental health status and the use of health services. For example, whereas the "psychologically distressed" have been found to use health services more often than the "non-distressed" amongst the aged (Levkoff, Cleary, & Wetle, 1987); such relationships have not been noted by others (eg Berkanovic & Hurwicz, 1989; Wolinsky et al., 1983). Berkanovic, Hurwicz and Landsverk (1988) also found that while the "distressed" report more illnesses, they are no more likely than the "non distressed" to make either genuine or unnecessary physician visits. Recently, Manning and Wells (1992) investigated the effects of psychological distress and psychological well-being on medical services utilisation, along with measures of perceived general health, physical health, demographics and insurance. They found that psychological distress and psychological well-being had opposite effects. Greater psychological distress was associated with more use; but greater, not lower,

psychological well-being was associated with more use. In this case, the authors reported that the impact of psychological well-being modifies the main effect of psychological distress by partly acting as an indicator of an ability to respond to psychological distress by seeking help. Based on this review then, the evidence for the link between mental health status and health services use is at best, inconclusive.

Differences in perceptions of health status between the aged and the young have also been documented; and again, the evidence is conflictual. For example, older people were shown to perceive their health more positively than younger people (Cockerham, Sharp & Wilcox, 1983); yet, older people were also found to be more pessimistic about their health than younger people (eg Levkoff et al., 1987).

Given the conflicting evidence on the relationship between mental health status and health services use on one hand, and the importance of psychosocial factors in boosting the explanatory power of Andersen's model on the other, the present study will therefore incorporate extra variables to reflect these issues. Thus, indicators which reflect participants' psychosocial experience during the past 12 months including the number of stressful life events and social contact (including attending church) will be examined. Mental health status via psychological distress and psychological well-being will be investigated and treated as need factors, while life events and social contacts will be examined as predisposing factors.

2.3 Satisfaction with GP Services:

The question of how accessible are health care services to Pacific Islands people will be dealt with through dimensions of access proposed by Penchansky and Thomas (1981), using measures similar to those used by Gribben (1992). The wider picture of access to health care services, in particular, will be explored by examining whether satisfaction with physician services influences people to access more or less use of these health services. This is important since these are currently unknown in the health behaviour of Pacific Islands people. The present study will therefore assess satisfaction with physician services using two subscales of satisfaction - general satisfaction with services and

satisfaction with quality of services (Robbins, Bertakis, Helms, Azari, Callahan & Creten, 1993). These variables will be treated separately.

2.4 Other Health Professionals, Prescription Items:

The operationalisation of health services utilisation has often been limited to measures of use of medical care personnel such as family physician or hospitalisation. It may be useful to extend this operationalisation by incorporating services of other health professionals such as social worker, physiotherapist or psychologist in order to capture a wider view of the construct of services utilisation. Therefore, the present study will acknowledge this possibility by including a list of other health professionals. Similarly, the number of prescription items respondents obtained for themselves from the chemist in the last 12 months (Kandrack et al., 1991), will also be used for the same reason.

3. Study Aims:

The issues surrounding the "goodness of fit" of Andersen's behavioural model in conceptualising health care behaviour are far from being resolved; and suggested ways of enhancing the predictive utility of the model have proliferated (eg Cheng, 1992; Nelson, 1993; Wolinsky & Coe, 1984; Wolinsky et al., 1989; Wolinsky & Johnson, 1991; 1992). However, it should be noted that the weight of this evidence points to the health behaviour of the American elderly. To what extent are these findings generalisable to populations or cultural groups in other contexts? For example, given the notion that health care seeking behaviours are partly dependent on cultural differences in the use of care (Keith & Jones, 1990; Leclere et al., 1994; Meleis, Lipson, & Paul, 1992), the ethnic diversity of the New Zealand population, would probably mean differences in health needs amongst the groups; yet, relatively few studies have examined this possibility. On the other hand, whilst Andersen's model has been shown to have better explanatory power in conceptualising health care practices of the general population (Aday & Andersen, 1975; Aday et al., 1980; Andersen, 1968) than it is for the elderly (Branch et al., 1981; Wolinsky et al., 1989; Wolinsky & Coe, 1984), again, this has

rarely been demonstrated in the New Zealand context. With these in mind, the primary aim of the present study is as follows:-

> *"In a replication of Wolinsky & Johnson's (1991) study in a New Zealand context, extra measures of predisposing characteristics, enabling characteristics, need characteristics and the use of services, will be used to investigate a Pacific Islands sample, to assess, cross-sectionally, the relationships hypothesized in Andersen's behavioural model of health services utilisation".*

This strategy serves two purposes: First, it provides a comprehensive assessment of Pacific people's use of health services, and hence, exploring possible predictors of health services utilisation not previously available from this group. Second, by including additional measures of predisposing, enabling, need, and services use factors, the dynamics of Andersen's behavioural model will be further examined in a Pacific Islands sample.

4. Method:

4.1 Respondents:

Data for this study were obtained from a national survey which assessed the nature of traumatic events in a New Zealand population, the consequences of being exposed to such events in terms of physical and mental health and well-being, and subsequent patterns of health care service utilisation. From each of 150 Census meshblocks sampled in 14 regions throughout New Zealand, eligible participants were contacted from randomly selected households. Ten interviews were carried out in each meshblock. The survey, which was ethnically and geographically stratified, was designed to yield disproportionately large sub-samples of Maori and non-urban respondents. This approach was necessary as it would provide sufficient of these populations of interest to permit conclusions to be drawn about their experience with a greater statistical reliability, than would otherwise be the case if their representation in the sample was in proportion to their presence in the total population in the country. A geographic distribution of

meshblocks is provided in Table 1. From the 3,562 initial contacts, 42% were eligible, available and willing to participate. Of this group, there was a total of 53 Pacific Islands respondents and the information gained from this group has been incorporated in the present study. The overall sample of 1500 respondents has been described in details elsewhere (MacDonald, Flett & Long, in press).

Table 1: Geographic Distribution of Meshblocks

Region	Number of Meshblocks
Northland	16
Auckland	23
Waikato	19
Bay of Plenty	28
Gisborne	16
Hawkes Bay	7
Taranaki	5
Manawatu -Wanganui	8
Wellington	10
Nelson - Marlborough	2
West Coast	2
Canterbury	7
Otago	4
Southland	3

4.2 Procedure:

Structured interviews were carried out individually by trained data collectors from the National Research Bureau (NRB) with each participant in their own home. The duration of the interview ranged from 45 to 60 minutes. Responses were recorded by the interviewers on each interview outline, and data collection was completed over a period of three months. Participants were informed that their responses would remain anonymous and confidential; that they could skip or omit any question; and that they could withdraw from the study at any time. Respondents were also informed that feedback of the results of the study could be provided for them if requested.

4.3 Measures:

The measures used in the structured interview formats and incorporated in the present study are summarised in Table 2, with their means, standard deviations and response formats.

4.3.1 Predisposing Characteristics:

There are 14 measures of predisposing characteristics including sex, age, ethnicity, educational qualifications and paid employment. Ethnicity was assessed via a 10-item scale from which the respondent can choose the item that best describes them. This measure was originated from the 1986 New Zealand Census. Educational qualifications were measured using an 8-item scale, also from the 1986 New Zealand Census, in which respondents select an appropriate description that applies to them.

Following Nelson's (1993) suggestion, a wider picture of social contacts was assessed using three possible indicators - whether respondents have got together (contact), have spoken on the phone to relatives and friends, and whether they have attended church in the last two weeks. The single social contact score was provided by summing up the types of actual contacts made from each of the items - contact, spoken on the phone, and attending church. Those with more social networks are expected to have higher use of physician services than those with less social networks. Whether the individual has a telephone in the house or access to a vehicle is believed to predispose the use of support mechanisms; and these, in turn, are perceived as means of facilitating socioemotional needs (Wolinsky et al., 1991). As such, these were considered as more appropriately fitting the measures of predisposing characteristics rather than enabling characteristics.

Life events which represent the experience people have had during the past 12 months, was measured by a 20-item scale which is a combination of positive and negative life stressors found to be significant in other studies (Raphael, Lundin & Weisaeth, 1989). Contrary to Jewett et al's, (1992) assertion that life events should be treated as a need characteristic since it measures life stresses, the viewpoint taken by the present study was that each of the items which conceptualises life events in this case (eg major financial difficulties or improvements; moving house; death of a spouse), cannot be eliminated

from their social contexts. These items are regarded as psychosocial in nature and therefore they fit appropriately within the construct of predisposing characteristics, because they reflect the individual's social position, rather than their perception of need.

Health beliefs in the present study examine the individual's attitudes and perceptions toward their overall health status. Two markers of health beliefs were based on the scale used by Wolinsky & Johnson (1991; 1992). The first item asked respondents whether their overall health status in the past 12 months had caused them "a great deal of worry, some worry, hardly any worry, or no worry at all". The second item asked respondents about the control they thought they had over their future health: would they say "a great deal, some, very little or no control". Each of these two items was assessed separately.

Given the migratory nature of the group under study, two items - NZborn and NZtime were used to detect any differences in utilisation patterns between those who were born in New Zealand, and those who were not. NZborn is a dichotomous indicator in which respondents were asked to indicate yes, if they were born in New Zealand, or no if they were not. The second item, NZtime, ask participants to indicate the length of time they lived in New Zealand, and responses to this item were recorded in months. Length of time in area of residence was also used to assess respondents' geographical stability, the idea that people who have lived longer in the same town or place are more aware of health services that are available. As such, they are more likely to have established relations with health providers and thus, are more likely to facilitate health services use (Wolinsky et al., 1989). Responses to this item were recorded in months.

4.3.2 Enabling Characteristics:

There were 13 measures of enabling characteristics. Income was assessed both objectively (annual income before tax), and subjectively (via a 4-point scale of "satisfaction with overall standards of living; and a 4-point scale of "the ability to manage on current income"). Three items were used to investigate affordability issues of access. The first item - "doctor's fees" - required respondents to indicate whether these have stopped them from seeking physician advice even when it is seen as necessary (Gribben, 1992). Both of the other two items were dichotomous indicators of whether respondents have "private insurance" (Wolinsky & Johnson, 1991; 1992); and "community service

cards". Three items were also used to examine acceptability issues of access; whether the respondent had a "regular doctor" (Wolinsky & Coe, 1984); how long s/he had been seeing the "same doctor"; and whether the doctor was "male or female". These items could determine whether there was a preference for same sex physician selection.

As applied by Gribben (1992), modes of transport or respondents' means of getting to the doctor's office were used to assess accessibility factors of access. Accommodation features of access were assessed by two items similar to those used by Gribben (1992). The first item - "appointment delay" - required respondents to indicate whether they usually get an appointment to see the doctor the same day, the next day or at some other time. This item was dichotomised to maximise contrasts between those who were able to see the doctor on the same day, and those who were not. The second item - "GP waiting time" - asked participants to indicate how long they usually have to wait in the doctor's waiting room before being seen by the doctor. Responses to this item were recorded in minutes.

Satisfaction with physician service was assessed using an 8-item scale which yield two subscales representing two dimensions of client satisfaction - general satisfaction with care, and satisfaction with the doctor's quality and/or competency (Robbins, Bertakis, Helms, Azari, Callahan & Creten, 1993). General satisfaction with physician service was assessed using four items and these include the following: "my doctor could give better care; there are things about the medical care I receive that could be better; I'm satisfied with the medical care I receive from my doctor; and the care I receive from my doctor is just about perfect".

Satisfaction with the quality of the physician's competency was also measured with four items and these were: "my doctor is not as thorough as s/he should be; my doctor does not explain ways to avoid illness or injury; my doctor encourages me to get regular examination; and my doctor is very careful to check everything when examining me". Respondents were asked to indicate from an 8-item list how they viewed the overall medical care they received from their family doctor. Would they say they strongly agree (1), agree (2), unsure (3), disagree (4), or strongly disagree (5). Thus, the higher the

score, the less satisfied the client was with physician service. Each of these two components of satisfaction was treated separately.

4.3.3 Need Characteristics:

There were 10 measures of the need for health services. Self rated health which reflects individuals' subjective perception of their health status was assessed using a single four point item similar to those used by Wolinsky and Johnson (1991), and Gribben (1992). Here, participants were asked to rate their current overall health as excellent, good, not so good, or poor. Responses to this item were dichotomised into either positive (excellent or good), or negative (not so good or poor).

The experience of physical symptoms or somatic problems which can be bothersome in everyday life was measured by a scale based on the Pennebaker Inventory of Limbic Languidness (PILL) (Pennebaker, 1982). From the PILL's original scale of 54 items, 28 items were chosen for the present study. Typical examples of these items include "insomnia or sleep problems, toothache, racing heart, nausea or vomiting, and eye problems". Respondents were asked to rate their experience of these symptoms and complaints on a 5-point scale indicating either: 1 - not at all, 2 - a little, 3 - moderately, 4 - quite a bit, and 5 - extremely. The score provided represents the number and severity of physical symptoms.

Chronic health problems as professionally assessed needs were measured by a 17-item list which typically included such chronic symptoms as hepatitis, epilepsy, heart trouble, cancer, asthma and diabetes. This item is a dichotomous indicator of whether respondents have been told by any health professional that they had any of the chronic health problems listed in the items list. This list of chronic health problems was developed from a checklist of serious medical conditions (Belloc, Breslow, & Hochstim, 1971), in connection with common chronic health conditions identified in the 1992-1993 Household Health Survey (Statistics New Zealand & Ministry of Health, 1993). Since the diagnoses of such chronic health conditions are often provided by none other than the medical experts themselves, this item therefore can be seen as reflecting professionally evaluated need.

Deficits in activities of daily living were used to mirror the limitations individuals experience in daily life due to ill health, and which in turn created need for use of health care services. As in Wolinsky and Johnson's (1991) study - this variable was assessed using the same 12-item list of activities. These items were selected from a number of instruments including Activities of Daily Living (ADL) scale developed by Katz, Ford, Moskowitz, Jackson & Jaffee (1963), as well as the Instrumental Activities of Daily Living (IADL) scale designed by the Duke University Centre for the Study of Aging and Human Development (1978). The items represent three subscales to assess three activity dimensions: basic activities (5 items related to personal care including bathing, dressing, getting out of bed, walking and toileting); household activities (4 items related to meal preparation, shopping, light housework, and heavy housework); and advanced activities (3 items related to managing money, using the telephone and eating). Each of these three dimensions of activities of daily living was treated as a separate variable. Respondents were asked to indicate, if any, daily activities that cause them trouble because of their health. It should also be noted here that, since limitations of daily living were subjectively assessed, these measures, therefore, cannot be taken as proxies of professional evaluations as others have argued (eg Wolinsky & Coe 1984; Wolinsky et al., 1989; Wolinsky & Johnson, 1992).

Similarly, functional limitations which reflect individuals' perceived needs were assessed using the same scales as those used by Wolinsky and Johnson (1991). The items on this functional limitations scale were originated from the disability scale designed by Nagi (1976). Two dimensions of functional limitations are lower body limitations, and upper body limitations. Lower body limitations were measured with five items: walking half a kilometre; walking up ten steps without rest; standing or being on your feet for two hours; stooping, crouching or kneeling; and lifting or carrying ten kilograms. Upper body limitations were assessed using four items: sitting for two hours; reaching up over your head; reaching out as if to shake hands; and using fingers to grasp objects. Respondents were required to indicate whether they had found any of these activities difficult to do. The two dimensions were treated as separate variables.

In assessing Mental health, a 38-item scale of the Mental Health Inventory (Veit & Ware, 1983) which covers a variety of emotional and psychological states, was used to identify

two dimensions (and hence, yield two subscores) of "psychological distress and psychological well-being". Typical examples of items from this inventory include: "a happy person; felt loved or wanted; felt emotionally stable; hands shake when tried to do something; feel like crying; wake up feeling fresh and rested; depressed; in control; lonely". The two dimensions were treated as separate variables in the present study. Participants were asked to indicate on a 7-point scale how often they had experienced each of the 38 listed conditions during the past month. In terms of the utility of these measures, Veit and Ware found that both dimensions have high internal consistency and high one-year stability.

Disability days required respondents to indicate the number of days in which ill health has interfered with their ability to perform normal daily activities (eg going to work, playing sports, or doing housework) during the past three months. Thus, this variable was measured via the actual number of days. Since ill health may lead to a disability or an inability to perform normal functioning, and this in turn is more likely to create a need for consulting health services, this study treated disability days as a need factor rather than an informal measure of health services use, as was the case in Wolinsky & Johnson's (1991) study.

4.3.4 Health Care Use:

The utilisation of health services was assessed via four measures. Following Wolinsky and Johnson's (1991) distinction of formal and informal services, three measures accounted for the former, and one measure accounted for the later. Three measures of formal services for which respondents were required to indicate are: the number of visits to the doctor in the past 12 months; the number of prescription items bought from the chemist in the past 12 months (Kandrack et al., 1991), and the last measure of formal services, as originated by Strain (1991), asked respondents whether they have sought advice or help from health professionals other than physicians or general practitioners in the previous 12 months period. Health professionals referred to here are medical specialist other than GP or family doctor; dentist; optometrist or optician; physiotherapist; chiropractor; psychologist; psychiatrist; occupational therapist; counsellor; social worker; and naturopath or homeopath.

The utilisation of informal health care service was assessed with a number of bed days taken during the past 12 months period. Respondents were asked to indicate the number of days they spent at home in bed, because of ill health.

4.3.5 Analysis:

Following data screening, log transformations were applied to normalise the highly positive skewed measures of health services use, considered to be dependent variables in the present study. The relationships between variables were then investigated using correlation coefficients (Pearson's r's), chi-squares, and t-tests. For t-test analysis, the sample variances for each comparison made, were assessed using an F test in order to determine if they were or were not equal. When the probability of F was proved to be > .05, the sample variances were considered equal and t statistics based on pooled variance estimates were used. To put it another way, sample variance were considered unequal when the probability of F was < .05; and in such cases, the t statistics based on separate variance estimates were used (Snedecor & Cochrane, 1980).

Four dependent variables investigated here represent three formal measures of health service use namely, number of visits to the doctor in the preceding 12 months period; number of other health professionals consulted during the past 12 months, number of item prescriptions obtained from the chemist for personal use in the last 12 months period, and one informal measure of services utilisation - number of days spent at home, in bed, because of illness during the past 12 months. For these measures, data screening revealed limited variability of responses in distributions for both bed days and item prescriptions, indicating that conducting multiple regression analyses on these two measures may not be appropriate. Therefore, as dependent variables in the study, these two measures were analysed using oneway analysis of variance (ANOVA), while multiple regression were used to assess the other two dependent variables - GP visits and other health professionals sought. For ANOVA, each of the measures of item prescriptions and bed days taken was trichotomised into low, medium and high groupings, and their respective relationships with independent variables were then compared using group means.

In undertaking regression analyses, the small number of cases, and the relative skewness of utilisation measures (despite log transformation), means that it was impossible to enter all independent variables in the regression equation. In particular, the amount of missing data, the number of variables, plus ratio of cases to variables means that replicating regression analyses procedures similar to those adopted by Wolinsky and Johnson's (1991, 1992), in which the contribution of need factors were assessed after controlling for predisposing and enabling factors, cannot be justified here. Accordingly, the present study considers the combined effects of predisposing factors and enabling factors, and the contribution of need factors, separately, in assessing the predictive utility of the behavioural model. Thus, in conducting regression analyses the following procedures were adopted. For each of the two measures of utilisation of health care services, namely, visits to the GP and other health professionals seen, two multiple regression analyses were conducted; one for need factors, and one for the combined contribution of predisposing and enabling factors; thus, a number of four multiple regression analyses were carried out. Means substitutions for missing data were utilised in each regression analysis. In selecting predictor variables for the regression analyses, those variables found to be significant in previous studies were included, along with variables considered important to the goals of the present endeavour.

5. Results:

The results of the study are presented in the following manner. First, descriptive statistics of the sample relative to their predisposing, enabling and need characteristics, and their service utilisation behaviour will be provided to give some idea of the nature of participants under study. Second, relationships between variables via t-tests and/or chi-square results, will subsequently follow statistical descriptions for each of the variables under study. Third, findings from each of the eight hierarchical multiple regression analyses which assess the predictiveness of the behavioural model will be presented and summarised, and results described.

5.1 Descriptive Statistics:

A general profile of participants in the study through all variables used in the analyses is summarised in Table 2 with their means, standard deviations and coding algorithms.

Table 2: Means, Standard Deviations and Coding Algorithms for the Study Variables. (following Wolinsky & Johnson, 1991)

Variables	Mean	SD	Coding Algorithms
Predisposing Characteristics			
Age	3.41	1.32	1 = 20-29 yrs, 2 = 30-39 yrs, 3 = 40-49 yrs, 4 = 50-59 yrs, 60-69 yrs, 7 = 70-79.
Gender	1.64	.48	1 = male, 2 = female
Currently married	1.45	.50	1 = Yes, 2 = No
NZ Born	1.73	.44	1 = Yes, 2 = No
Qualification	2.30	1.86	7 item scales (1-7) 1 = Noschool quals, 2 = School Cert, 3 = 6th form/Uni. Entrance, 4 = Busary/ scholarship, 5 =Trade/Prof.Quals 6 = Uni degree, 7 = Postgrad.
Paid employment	1.56	.50	1 = Yes, 2 = No
Telephone	1.30	.46	1 = Yes, 2 = No
Vehicle	1.47	.50	1 = Yes, 2 = No
Social contact	3.86	.81	Sum of 3 contact types: spoken contact and church.
Life events	3.73	2.08	Actual no. of events experienced
Health worries	2.56	.95	4 item scale (1-4) 1 = great deal, 2 = some 3 = hardly any, 4 = none.
Health control	1.83	.70	4 item scale (1-4) 1 = great deal, 2 = some 3 = very little, 4 = none.
Length of time in NZ	193.56	100.16	Actual number of months
Time in area of residence	130.97	110.73	Actual number of months
Enabling Characteristics			
Income	13735.36	10924.45	Actual annual income ($NZ)
Adequacy of Income	2.03	.94	4 item scale (1-4) 1 = cant manage, 2 = just enough 3 = little over, 4 = alwas extra.
Standards of Living	2.81	.76	4 item scale (1-4) 1 = very dissatisfied 4 = very satisfied
Community Service Card	1.34	.47	1 = Yes, 2 = No
Health Insurance	1.83	.37	1 = Yes, 2 = No
GP fees limit access	2.07	1.10	4 item scale (1-4). 1 = not at all 2 = occasionally, 3 = sometime 4 = often

Table 2 continued...

Variables	Mean	SD	Coding Algorithms
Time been with same GP	4.04	1.41	5 item scale (1-5). 1 = 0-3 months 2 = 4-12 months, 3 = 1-2 years 4 = 3-5 years, 5 = 5 + years
Sex of GP	1.16	.37	1 = male, 2 = female
GP waiting times	27.78	27.49	Actual number of minutes
Appointment Delay	1.34	.47	1 = same day, 2 = next day to 1 week.
General satisfaction	9.97	2.11	5 items scale (1-5) 1 = strongly agree, 5 = strongly disagree.
Satisfaction with quality of service	11.12	2.26	5 items scale (1-5) 1 = strongly agree, 5 = strongly disagree.
Need Characteristics			
Self-rated Health	1.90	.59	4 item scale (1 - 4) 1 = excellent 2 = good, 3 = not so good, 4 = poor
Psychological Distress	64.75	26.84	Score onMental Health Inventory Minimum = 27, Maximum = 149
Psychological Well-being	74.52	14.15	Score on Mental Health Inventory Minimum = 43, Maximum = 97
Physical Symptoms	42.78	11.30	Composite score of number and severity (Min = 28, Max - 78
Chronic Health Conditions	1.45	2.47	No. of chronic health conditions Minimun = 0, Maximum = 17
Basic ADL's	.43	1.15	6 item scale (0-5) Sum of basic ADL's
Household ADL's	.50	1.01	5 item scale (0-4) Sum of household ADL's
Advanced ADL's	.30	.57	4 item scale (0-3) Sum of advanced ADL's
Lower body limitations	1.03	1.54	6 item scale (0-5) Sum of lower body limitations
Upper body limitations	.34	.78	5 item scale (0-4) Sum of upper body limitations
Disability days	3.54	7.08	Actual number of days
Health Services Utilisation			
GP visits	7.57	10 .81	Number of visits (including 0)
Prescriptions items	2.28	1.09	5 item scale (1-5) None, 1 - 4, 5 - 9, 10 -14, 15 +.
Other Health Professionals	1.03	1.22	Sum of visits
Home Health Service:			
Bed days	5.00	9.94	Number of days in bed, sick

5.1.1 Predisposing characteristics: Descriptive statistics:

The sample consisted of 34 females and 19 males; and they ranged in age from 20 to 75 years with a mean age of 37 years (SD = 13.4). The sample contained Samoans (N = 23), Cook Islanders (N = 12), Tongans (N = 13), and Niueans (N = 5). A crosstabulation of the sample distribution of ethnicity by age is provided in Table 3. It can be seen from this Table that 79.3% of the total sample were under 50 years old. The majority of participants were of Samoan ethnicity (43.4%) including the oldest respondent aged 75, who was female. This information can also be seen in Table 4 in which the age distribution for male and female respondents are crosstabulated.

Table 3: Sample Crosstabulation of Ethnicity by Age

	Ethnicity					
Age Groups	**Cook Island**	**Samoan**	**Tongan**	**Niuean**	**Total**	**%**
20-29	5	5	5	-	15	28.3
30-39	4	8	2	4	18	34.0
40-49	1	4	4	-	9	17.0
50-59	1	4	1	-	6	11.3
60-69	1	1	1	1	4	7.5
70-79	-	1	-	-	1	1.9
Total Count:	12	23	13	5	53	
Percentage:	22.6	43.4	24.5	9.5		100

Table 4: Age Ranges for Male and Female Respondents

		Age in Years							
		20-29	30-39	40-49	50-59	60-69	70-79	**Total**	**%**
Gender									
Male	**Count**	4	5	4	3	3	-	19	35.8
Female	**Count**	11	13	5	3	1	1	34	64.2
Total	**Count**	15	18	9	6	4	1	53	
Total %		28.3	34	17	11.3	7.5	1.9	-	100

Ninety percent of respondents were residing in urban settings and over half (54.7%) were currently married. The sample came from a variety of living arrangements with 54.7% living in rental accommodations; 22.6% living in family home situations; 20.8% owned their own homes; and one respondent (1.9%) claimed to live in a house with a

job. Seventy seven percent of the sample also reported living with two or more other adults in the house.

The majority of the sample (73.6%) (N = 39) were born outside New Zealand but had lived in New Zealand for an average of 16 years. Relatively few had formal school qualifications with 41.5% (N = 22) having no school qualifications, and 35.8% having 1 or more School Certificate papers as their highest school qualification. This information is presented in Table 5 in which NZborn is crosstabulated with educational qualifications. T-test analysis revealed that differences in educational qualifications between the NZborn and the non-NZborn were not significant. Similarly, t-test showed that gender differences in levels of education were also nonsignificant.

Table 5: Crosstabulation of NZborn by Educational Qualifications Qualification

	No School Qualifica -tions	School Cert	6th Form or UE pass	Trade/Prof Diploma	Uni Degree/ Diploma	Other (eg overseas qualification)	Total	%
NZborn								
Yes	4	5	2	1	-	2	14	26.4
No	18	14	2	3	1	1	39	73.6
Total	22	19	4	4	1	3	53	-
%	41.5	35.8	7.5	7.5	1.9	5.7	-	100

Twenty-three of the respondents (43.4%) were in paid employment for an average of 37.5 hours per week, and hours of paid work ranged from 3 to 65. Chi square analyses showed that sex differences in levels of employment were not independent of each other.

Inspection of the number and types of life events experienced by the sample during the preceding 12 months showed that family problems, family health concerns, improvement in financial situation, and unemployment were the most commonly experienced. This information is presented in graph form in Figure 1. When the sum of life events were computed for each respondent, the highest number of life events experienced by anyone of the participants was seven. Interestingly, 81% of the sample were evenly distributed

between one and seven of the possible 20 events, suggesting a homogeneous experience amongst the group. The distribution of scores of life events is presented in Table 6.

Figure 1: Frequency of Life Events

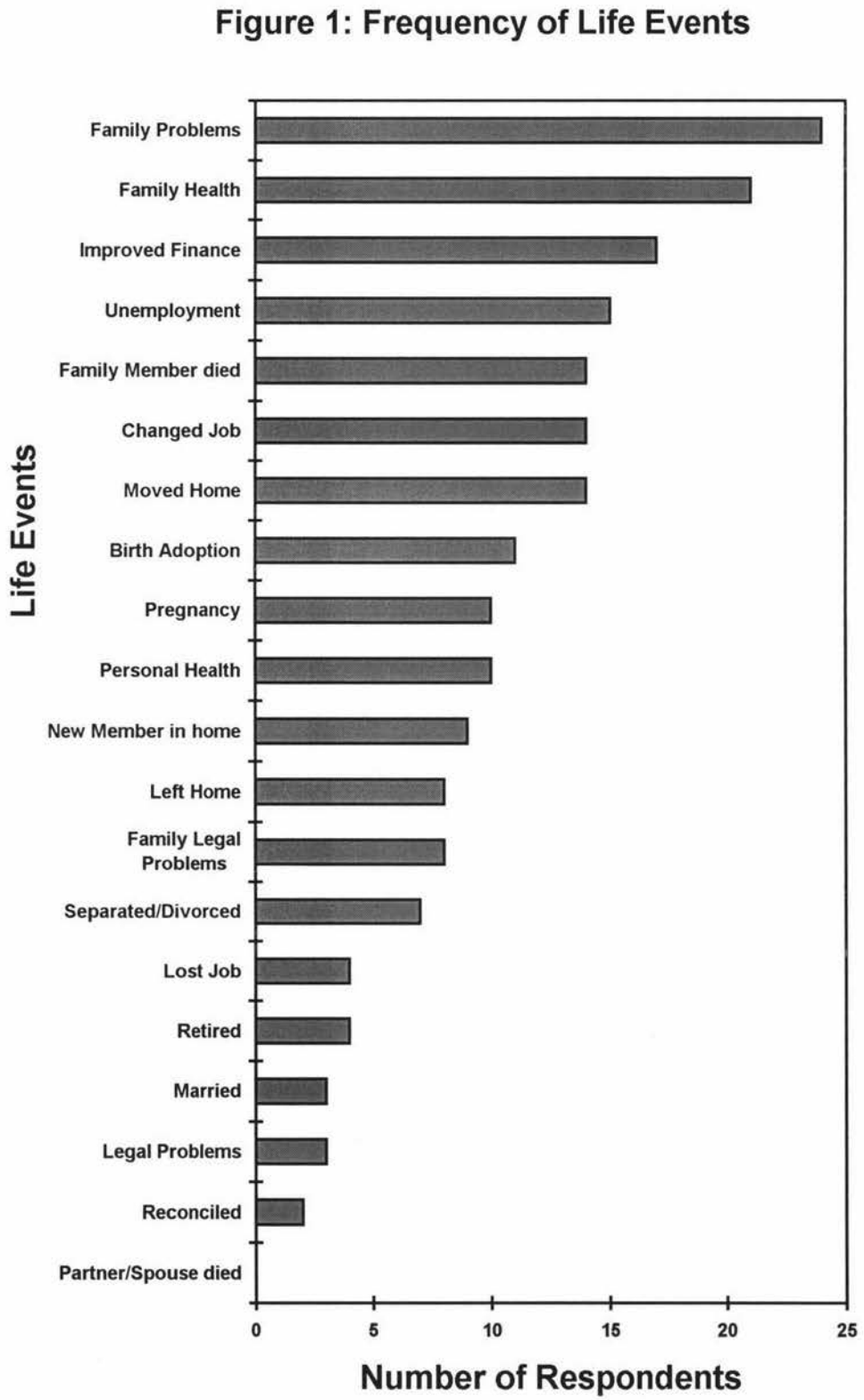


Table 6: Number of Life Events Experienced by Respondents		
Number of Life Events	**Number of Respondents**	**Percent**
0	10	19
1	5	9.4
2	6	11.3
3	7	13.2
4	7	13.2
5	7	13.2
6	6	11.3
7	5	9.4
Total	53	100.0

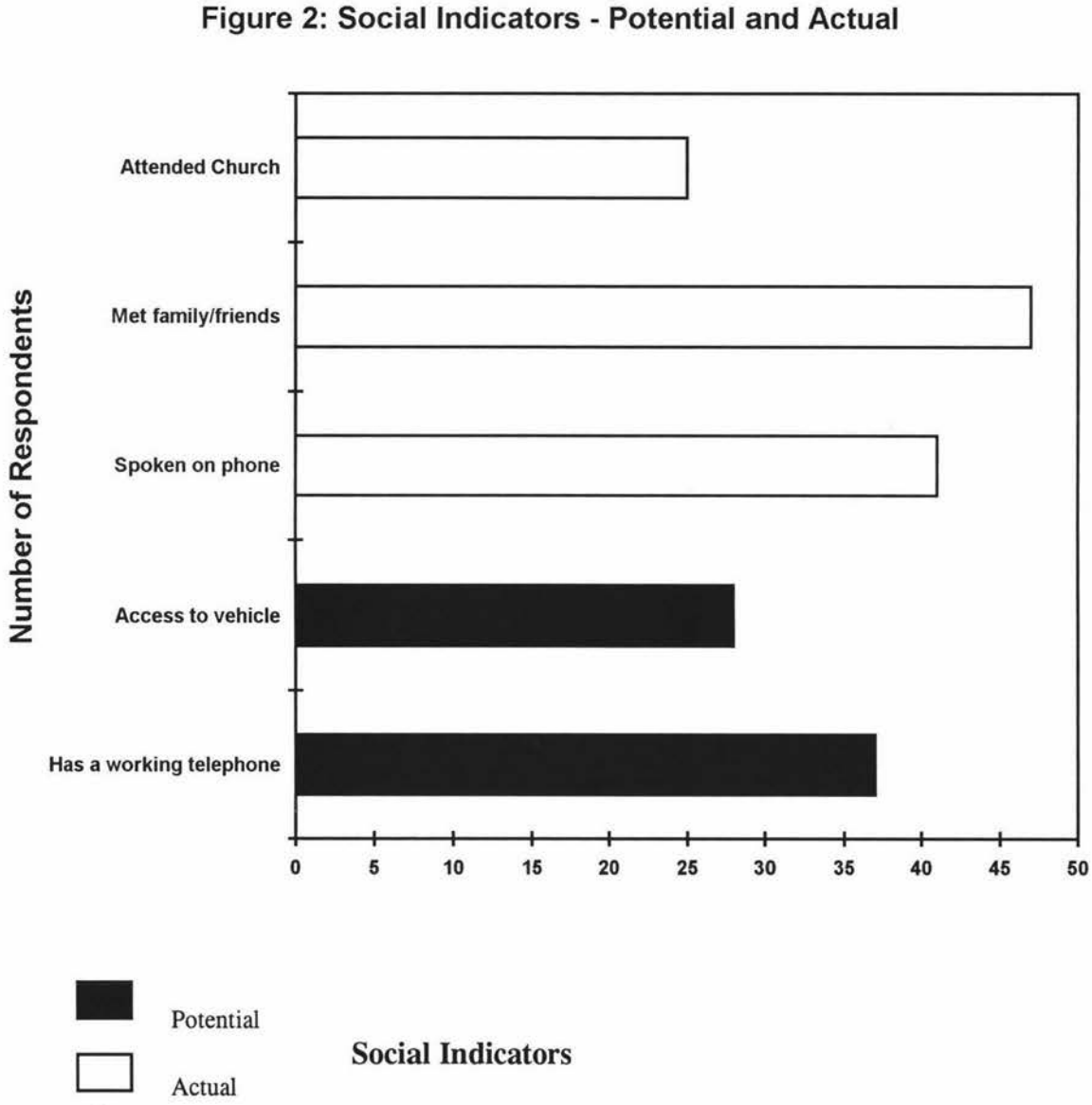
To establish the relationship between life events and health care services, life events was turned into a dichotomous indicator of high and low groupings using its median score; and t-tests were used to assess the mean difference for the groups relative to different measures of utilisation. The results showed that those who encountered more life events in the past 12 months ($M = 20.55$, $SD = 1.35$) were less likely than those who did not ($M = 21.21$, $SD = 1.08$), to have sought help or advice from other health professionals, and on t-test analysis, this difference was significant $t(51) = 1.96$, $p < .05$. T-test analyses also showed that life events were not related to other measures of health services utilisation.

Social indicators or mechanisms for social contacts reported by the sample are presented in Figure 2. As shown, over half of the sample (69.8%) ($N = 37$) reported having a working telephone in the house, suggesting a fair potential for social activity participation, although less than half of participants (47.2%) claimed to have no access to a vehicle for their private use.

The actual experience of the sample in terms of their social networks/contacts over the past two weeks revealed that 77.4% ($N = 41$) have spoken on the phone with relatives and friends, 88.7% ($N = 47$) have got together with friends and relatives; and that 47.2% ($N = 25$) have attended church. This is in line with the notion that people often make use of means which enhance their social accessibility, and which in turn lead to more social contacts, although slightly less than half of the sample reported attending church in the past two weeks. The social contact variable for the present analysis was

provided by summing up three scores of respondents' actual experience of the past two weeks - spoken on the phone with friends and relatives, got together with friends and relatives, and attended church (see Table 2).

Figure 2: Frequency distribution of social indicators for potential and actual social contacts by the sample.



In summing up the actual social contact measures, it is interesting to note that none of the respondents have experienced no social contact in the past two weeks, and this may indicate the supportive nature of the group under study. Table 7 presents this information. As can be seen from this table, of all social contacts encountered during this time, 77.3% (N = 41) of respondents have had one or two types of social contacts,

and that, 22.7% (N = 12) have had three types of social contacts. This is not surprising given that only four respondents reported living alone, and that the majority of the sample either lived with two or more other adults, or in extended family type situations. Contrary to expectation, t-test analysis revealed no gender differences in levels of social contacts.

Table 7: Scores of Types of Actual Social Contacts

Number of Social Contacts	Frequency	Percentage
One	20	37.7
Two	21	39.6
Three	12	22.7
Total	53	100

For health beliefs, respondents generally felt they had some degree of control over their future health, with only 13.2% indicating they believed they had very little or no control. In contrast, an even spread of respondents amongst different degrees of health worry was noted, with 51% having reported little if any worry related to their health; and 49% have reported a great deal or some degree of worry. This information is outlined in Table 8.

TABLE 8: Frequency Distribution of Degrees of Perceived Health Control

Degree of Health Control	Frequency	Percent
Great deal	17	32.1
Some	29	54.7
Very little	6	11.3
None	1	1.9
TOTAL	53	100.0

Frequency Distribution of Degrees of Health Worry

Degree of Health Worry	Frequency	Percent
Great deal	7	13.2
Some	19	35.8
Hardly any	17	32.1
None	10	18.9
TOTAL	53	100.0

Subjective evaluation of health is characterised as a continuous variable; and to investigate the association amongst the continuous variables in the predisposing component of the model and measures of health services use in the study, intercorrelations based on Pearson's r were examined. The correlation coefficients for these variables are presented in Table 9 with indicated degrees of significance. From this table, it can be seen that a high degree of worry about health was significantly associated with more bed days taken, $r = -.463$, $p < .01$, suggesting that those who worried more about their health were more likely to have stayed home in bed, sick. Seeking help from other health professionals was associated with having experienced less life events, $r = -.379$, $p < .05$. There was also a significant correlation between age and life events, $r = -.359$, $p < .05$, indicating that young persons were likely to have experienced more life events than old persons. Finally, other measures of health services use were unrelated to any of these variables.

Table 9: Intercorrelations between continuous variables and health services measures

	Age in years	Health control	Health worry	Life events	Social contacts	GP visits	Other health professionals	Prescription items	Beddys
Age	1.000								
Health control	-.101	1.000							
Health worry	.057	-.156	1.000						
Life events	-.359*	.033	-.230	1.000					
Social contacts	.048	.092	-.097	-.021	1.000				
GP visits	-.031	-.046	.006	.134	-.041	1.000			
Other health professionals	.081	.025	.271	-.379*	.206	-.074	1.000		
Item prescriptions	.055	.126	-.237	.179	.139	.274	-.283	1.000	
Beddys	-.033	-.067	-.463**	.167	-.052	.108	-.316	.166	1.000

***Correlation is significant at the 0.05 level (2-tailed) **Correlation is significant at the 0.001 level (2-tailed)**

5.1.2. Enabling Characteristics: Descriptive Statistics:

The annual income rates for this group ranged from $3640.00 to a maximum of $46,800.00 (as reported by one respondent), with an average annual income of $13,753.36 (SD = $10,924.45) (see Table 2). As expected, men (M = $20684, SD = $13837.72) earned higher income then women (M = $10141.24, SD = $6949.20), and on t-test analysis, the mean difference for the groups was statistically significant, $t(42) = 3.38$, $p < .01$.

For adequacy of income, the sample was asked to rate their ability to manage on their income, the responses to four choices were: Can't manage (35.8%, N = 19), Just have enough (30.2% N = 16), Sometimes have a little bit over (28.3%, N = 15), Always have extra (5.7%, N = 3). This information is presented in Table 10. The mean rating for the sample was 2.03 (SD = .94) (see Table 2). This variable was dichotomised into high and low groups to examine its relationship with service utilisation measures. Using a t-test to compare the group means against levels of physician visits, the results showed that those who struggled to manage on their income (M = 9.00, SD = 14.47) were more likely than those who had no problems with managing on their income (M = 3.54, SD = 4.95) to have utilised GP services in the past year, with the mean difference reaching significance at .05 level, $t(50) = 1.98$, $p < .05$.

Table 10: Frequency Distribution of Perceived Adequacy of Income

Degree of Adequacy	Frequency	Percent
Can't manage	19	35.8
Just enough	16	30.2
Little over	15	28.3
Always extra	3	5.7
Total	**53**	**100.0**

Similarly, respondents were asked to rate their satisfaction with their standards of living on a 4-point scale ranging from 1 - very dissatisfied, 2 - somewhat dissatisfied, 3 - somewhat satisfied, 4 - very satisfied. A total of 71.7% of the sample have reported either somewhat satisfied or very satisfied. Table 2 shows the mean satisfaction rating for the sample was 2.8 (SD = 0.76). This variable was recoded to provide two groups, a satisfaction group and dissatisfaction group; and thereby maximising any relationships it may have with measures of health services use. On t-test analysis, however, differences in levels of satisfaction with standards of living were not significantly associated with any measure of utilisation of health services. It is interesting to note that the sample have reported high levels of ability to manage on income and satisfaction with standards of living, despite having reported low levels of income and paid work.

That most respondents (83%) reported not having health insurance was not surprising given the low levels of income reported by the sample. Over half (66%) also reported

having a Community Services card. Respondents were also asked whether doctors fees stopped them from seeing the doctor when they felt the need to go. Table 11 outlines this information. As can be seen from this table, more than half (54.7%) responded that doctors fees stopped them "occasionally, some of the time or often". Of this group, the mean score for women (M = 2.38, SD = 1.15) was higher than men's average score of 1.52 (SD = .77), and on t-test analysis, the difference between groups was significant, $t(51) = -2.88$, $p = < .01$. This is not surprising given that men, on average, earned higher income than women.

Table 11: Frequency Distribution of Degree of Bother by Doctor Fees

Degree of Bother	Frequency	Percent
Not at all	24	45.3
Occasionally	7	13.2
Some of the time	16	30.2
Often	6	11.3
Total	**53**	**100.0**

For acceptability issues of access, 92.5% of the sample reported having a regular doctor; over half (56.6%) claimed having been seen by the same doctor for 5 years or more, while less than 20% of the sample reported seeing the same doctor for 12 months or less. About 70% of respondents had visited the doctor in the last year, and in most cases, the doctor was male (77.4%). The chi-square test on the relationship between sex of respondents and sex of doctor was nonsignificant.

To maximise any relationship with GP visits, the variable of length of time respondents have been seen by the same doctor was recoded (not shown in Table 2), to provide two groupings - one for those who have been with the same doctor for 3 years or more, and one for those who have seen the same GP for 2 years or less. The mean score for the former (M = .44, SD = .31) was less than the mean score for the latter (M = .70, SD = .59), and on t-test analysis, the mean difference between these groups was significant, $r(47) = 2.00$, $p < .05$. This suggests that those who have been seeing the same doctor for a long period of time were less likely to have visited the GP more often than their junior counterparts in the last 12 months.

Accessibility factors of access as measured by modes of transport used by respondents to get to doctor's office are presented in Table 12, with private vehicle the most common means of transport used by 62.3%. The next most common way of getting to the GP's office was walking (20.8%), and this may reflect two possibilities: either ease of access, or, given the reported low levels of income, it may be that people cannot afford other means of transport.. The rest of respondents either caught the bus (9.4%), or rode a bike (1.9%). In assessing the relationship between mode of transport and GP visits, GP visits was dichotomised into high and low groups (using its median score), and on t-test analysis, the relationship was nonsignificant.

Table 12: Modes of Transport used to visit the Doctor

Modes of Transport	Number of Participants	Percent
Private Vehicle	33	62.2
Walk	11	20.8
Bus	5	9.4
Bike	1	1.9
Missing	3	5.7
Total	**53**	**100.0**

For accommodation features of access, reported waiting time before being seen by a general practitioner varied from 2 minutes to 2 hours, with an average waiting time of 27.7 minutes (SD = 27.4 minutes). Using its median value, waiting time was dichotomised into long waiting and short waiting groups to maximise any relationship it may have with GP visits. T-test analysis revealed that the long waiting group (M = .40, SD = .41) was less likely than the short waiting group (M = .64, SD = .46) to have visited the physician more often during the past year, and the difference between the groups was significant, $t(50) = 1.94$, $p < .05$. Gender differences in waiting time were also noted with the mean waiting time for females (M = 33.82, SD = 31.75) higher than the mean average for males (M = 16.38, SD = 10); and on t test analysis, the mean difference between the groups was significant, $t(50) = -2.26$, $p < .05$ - suggesting that women were more likely than men to have waited longer before being seen by the GP. Age was also significantly related to waiting time. Respondents aged 50 years or over reported longer waiting times (M = 43.27, SD = 38.96) than those aged 49 years or less (M = 23.63, SD = 22.37), and t test comparison of means showed that the mean difference was significant $t(50) = -2.18$, $p < .05$. Appointment delays ranged from one

day to one week with the mean rating of 1.49 (SD = .84). Arranging an appointment to see the GP on the same day could not be made for 34% of the sample. However, when this variable was recoded so that two groups (one for those who were able to see the GP on the same day and one for those who did not) were formulated, and using t-test to compare group means on levels of GP visits, the result showed no significant difference between the groups.

From Table 2, the sample mean for general satisfaction with GP services was 9.97 (SD = 2.11), and the mean rating for satisfaction with quality of the GP was 11.12 (SD = 2.26). To investigate whether satisfaction with physician services makes people access these services more or less, general satisfaction and quality satisfaction were correlated with GP visits (Pearson's r's) using option 5. The results showed that, although nonsignificant, the correlation between general satisfaction and GP visits, $r(N, 48) = .08$, $p > .05$, was in the expected direction; that is, more satisfaction leads to greater use of services. Quality satisfaction, on the other hand, was negatively associated with GP visits, $r(N, 48) = -.06$, $p > .05$, indicating that the likelihood of seeking physician services is not associated with satisfaction in the quality or competency of the GP.

5.1.3. Need Characteristics: Descriptive statistics:

The majority of respondents rated their health as good (64.2%) or excellent (22.6%), with only 13.2% claiming their health as not so good. From Table 2, the mean score for the group was 1.13 (SD = .34). T-test analyses showed that neither gender nor age differences were significantly related to self rated health. However, non-married persons (M = 2.08, SD = .58) were more likely to have rated better than married persons (M = 1.75, SD = .57), and t-test analysis confirmed that the mean difference between the groups was significant, $t(51) = -2.03$, $p < .05$.

It may be useful at this point to investigate the association between need variables and measures of health services utilisation, and based on Pearson's r, Table 13 presents the correlation coefficients for these variables with indicated degrees of significance.

Table 13: Intercorrelation of need variables and utilisation measures

	Self rated health	Distress	Wellbeing	Physical symptoms	Chronic symptoms	Basic ADLs	House ADLs	Advanced ADLs	Upper body	Lower body	Disabilty days	GP visits	Other health professionals	Items prescrips	Bed days taken
Self rated health	1.000														
Distress	.305	1.000													
Wellbeing	-.235	.450*	1.000												
Phystot	.287	.543**	-.105	1.000											
Chlthtot	.032	-.039	-.002	.043	1.000										
BasicADLs	.403*	.476**	-.141	.426*	.003	1.000									
HouseADLs	.343	.494**	-.126	.496**	.112	.656**	1.000								
AdvancedADLs	.373*	.370*	.006	.306	.205	.487**	.550**	1.000							
Upperbody	.556**	.315	-.161	.593**	.025	.560**	.586**	.523**	1.000						
Lowerbody	.488**	.402*	-.081	.383*	-.110	.710**	.498**	.574**	.590**	1.000					
Disability days	.280	.237	.105	.314	-.065	.385*	.376*	.480**	.576**	.564**	1.000				
Gpvisits	-.004	-.032	-.184	-.119	-.193	-.151	-.012	-.254	-.107	-.200	-.265	1.000			
Other health professionals	-.185	-.044	.116	-.381*	.040	-.233	-.272	-.098	-.551**	-.121	-.283	-.082	1.000		
Prescriptions	.257	.104	-.380*	.201	.396*	.030	.238	.111	.289	-.038	-.032	.276	-.360	1.000	
Beddys	.250	.284	-.260	.392*	-.096	.391*	.428*	.236	.431*	.421*	.509**	.111	-.295	.200	1.000

*** Correlation is significant at the 0.05 level (2-tailed)** **** Correlation is significant at the 0.01 level (2-tailed)**

It can be seen from this table that self rated health was not significantly correlated with measures of health services utilisation, but was positively correlated with basic ADLs, r = .403; p <.05, advanced ADLs, r = .373; p <.05, upperbody limitations, r = .556, p <.01; and lowerbody ADLs, r = .488, p <.01 - suggesting perhaps that, the more help people need to cope with these problems, the more likely they will be aware and thus learn to deal with them themselves, and therefore, the more likely they will be to increase their self perception of health.

With a score range of 28 to 78, a single rating displaying both number and severity of physical symptoms suggested generally lower scores (M = 42.78. SD = 11.30). Physical symptoms ratings, however, were positively correlated with household ADLs, r = .496, p <.01; basic ADLs, r = .426, p <.05; upperbody limitations, r = .593, p <.01; and lower body limitations, r = .383, p < .05. Experiencing more physical symptoms were also associated with higher level of psychological distress, r =.543, <.01. Of the measures of health services utilisation examined in the present study, physical symptoms was significantly correlated with other health professionals sought, r = -.381, p < .05, suggesting that the more physical symptoms people experienced, the less likely for them to have consulted other health professionals. The use of home health service of taking bed days was also significantly correlated with physical symptoms, r = .392, p <.05, indicating that the more physical symptoms encountered, the more likely that people will stay home, sick. T-test analysis showed no gender differences in number of physical symptoms encountered by respondents in the past month.

Of the different types of chronic health conditions suffered by respondents in the past six months or more, sight impairment or loss was the most commonly reported. When all 17 chronic conditions suffered were summed, the total mean score was 1.45 (SD = 2.47), with a range of 7. About 62.2% (N = 33) of the sample reported suffering from four or less health conditions, with 7 being the highest number of conditions suffered by one respondent. A number of 19 respondents (35.8%) also claimed that they did not suffer from any chronic health conditions at all. Table 14 outlines this information.

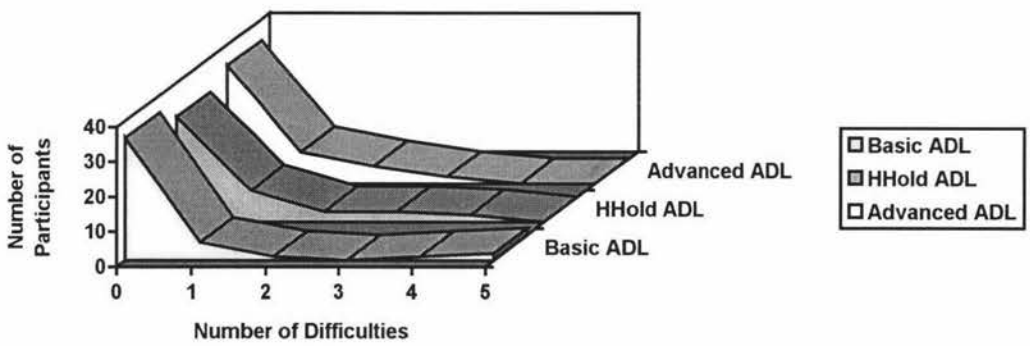
Table 14: Number of Chronic Health Conditions suffered by Respondents		
Number of Conditions	Number of Respondents	Percent
0	19	35.8
1	16	30.2
2	11	20.8
3	2	3.8
4	4	7.5
7	1	1.9
Total	**53**	**100.0**

To examine whether experiencing more or less chronic health conditions leads people to access more or less health services, chronic health was dichotomised into high and low groups using its median score. T-tests were then used to investigate the relationships between chronic conditions and all measures of health services use. The results showed that only item prescriptions was significantly related with chronic health. Specifically, those with a high number of chronic conditions ($M = 2.88$, $SD = 1.31$) were more likely than those with low number of these symptoms ($M = 2.00$, $SD = .84$) to have taken more medication, $t(50) = -2.93$, $p < .01$, in the past six months or more.

Respondents in general, reported lack of difficulty associated with activities of daily living, with 81.1% encountering no problems with basic activities, 71.7% not restricted by household activities, and 73.6% free of restraints in cognitive (advanced) activities. Figure 3 presents frequency distributions for the number of difficulties associated with activities of daily living, and these were divided into basic, household and advanced groupings. As can be seen from this figure, the number of limitations in basic and household related activities followed a similar pattern, but not the advanced related activities. The most commonly reported areas of difficulty were managing money (22.6%), an indice of cognitive related activities, and heavy housework (20.8%), an indice of household related activities.

Figure 3: Frequency Distributions of Difficulties with ADLs.

Figure 3: Frequency Distribution of Difficulties with Activities of Daily Living



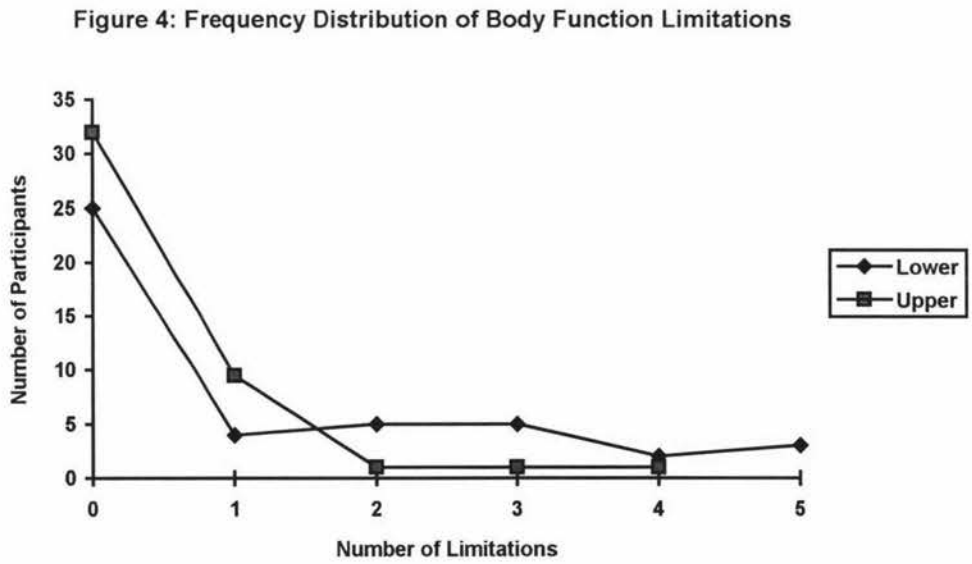
To investigate relations between activities of daily living (ADL) and health services use, each of the ADLs related variables, basicADLs, houesholdADLs and advancedADLs, were dichotomised into high and low groups so as to maximise comparisons. Using t tests analyses to assess the group means on levels of health services utilisation, here is what happened: Those who needed help with basicADLs (M = .81, SD = .51) were more likely than those who did not (M = .35, SD = .47), to have taken more bed days, $t(51) = -2.75$, $p < .01$; but less likely (M = 1.34, SD = 01) than the latter (M = 1.31, SD = .01), to have sought help from other health professionals, $t(51) = 3.72$, $p < .01$. The likelihood of taking more prescription items was also significantly related with basicADLs, $t(50) = -2.77$, $p < .01$, with those needing help with these daily activity types (M = .60, SD = .05) more likely than those who don't (M = .47, SD = .11) to have utilised this health service more often in the past 12 months.

Encountering more problems with householdADLs such as preparing meals, shopping, doing light and heavy housework means that these people (M = .59, SD = .13) were more likely than those who did not (M = .45, SD = .13), to have taken more prescriptions from the chemist for personal use in the last 12 months period, and on t-test analysis, the difference between the groups was significant, $t(50) = -3.92$, $p < .01$. Having more problems with householdADLs also mean that this group (M = .68, SD =

.64) is more likely than the less problems group (M = .33, SD = .41) to have taken more bed days, and on t-test analysis, the mean difference was significant, $t(51) = -2.35$, $p < .01$. For advancedADLs, those who needed more help with activities of managing money, using the telephone, and eating (M = .56, SD = .14) were more likely than those who did not (M = .47, SD = .12) to have taken medication in the past 12 months period; and on t-test analysis, the difference between the groups was also significant, $t(50) = -2.27$, $p < .05$.

Similarly, lack of difficulties with limitations of body functions have also been noted by the sample, with 77.4% indicating they had none of the five lower body limitations listed; and 60.4% claiming they did not experience any of the four upper body limitations presented. The most commonly reported body functional limitations were standing on their feet for two or more hours (26.4%), stooping (24.5%) and lifting 10 kilos (22.6%), all indices of lower body functions; although more participants were suffering from upperbody limitations. Figure 4 presents the frequency distributions of the number of body limitations, separated into upper and lower body limitations.

Figure 4: Frequency Distributions of Body Function Limitations.



Both lowerbody and upperbody limitations were also dichotomised into high and low limitation groups in order to maximise any associations they may have with measures of

health services utilisation. Using t tests analysis to compare the group means, the results are as follows: Greater difficulties with upperbody limitations means that this group (M = .63, SD = .58) was more likely than the less difficulties group (M = .30, SD = .40) to have taken more bed days, $t(51) = -2.43$, $p < .05$; but less likely (M = 1.34, SD = .02) than the latter (M = 1,32, SD = .02) to have sought help or advice from other health professionals in the past 12 months period, $t(51) = 2.94$, $p < .01$. Those with more problems with upperbody limitations moreover, (M = .53, SD = .13) were more likely than those with less problems in this area of functioning (M = .46, SD = .13), to have used more prescription items during the past 12 months period, $t(50) = -2.00$, $p < .05$.

On the other hand, needing help with limitations of lowerbody activities such as walking half a kilometre, walking up 10 steps without rest, standing or bending on the feet for two hours, and stooping, means these people (M = .77, SD = .55) were more likely then those who do not need help in these areas of functioning (M = .33, SD = .45) to have taken more bed days in the past 12 months, $t(51) = -2.81$, $p < .01$.

As can be seen from this table, relatively high correlations existed amongst the need variables. Some high correlations noted exist between difficulties with basic ADLs and limitations with lowerbody functioning, $r = .710$, $p < .01$, and household ADLs, $r = .656$, $p < .01$. Upperbody function limitations were also significantly related to physical symptoms $r = .593$, $p < .01$, difficulties with lower body limitations, $r = .590$, $p < .01$, difficulties with household ADLs, $r = .586$, $p < .01$, and basic ADLs, $r = .560$, $p < .01$. Needing help with advanced ADLs were associated with both lowerbody limitations, $r = .574$, $p < .01$, and upperbody limitations, $r = .523$, $p < .01$. Self rated health was associated with upperbody limitations, $r = .556$, $p < .01$, lowerbody limitations, $r = .488$, $p < .01$, and to a lesser extent, advanced ADLs, $r = .373$, $p < .05$.

For measures of health care services utilisation, those with higher physical symptoms were less likely to have sought help from other health professional, $r = -.381$, $p < .05$, but more likely to have stayed home in bed, $r = .392$, $p < .05$. Similarly, upperbody limitations were also related to both other health professionals seen, $r = -.551$, $p < .01$, and bed days, $r = ..431$, $p < .05$, suggesting that people with greater limitations in body activities of sitting for two hours, reaching out over the head or as if to shake someone's

hand, as well as using fingers to grasp objects, were less likely to have sought help from other health professionals, but were more likely to have stayed home in bed.

Chronic health symptoms, on the other hand, were significantly related to item prescriptions, $r = .369$, $p < .05$, indicating that the more chronic symptoms experienced by respondents, the more likely that they would have bought prescriptions from the chemist for personal use in the past 12 months period. Interestingly, none of the need variables were associated with GP visits.

From Table 2, the sample ratings on psychological distress varied from 27 to a maximum of 149 with a range of 122 and an average of 64.75 (SD = 26.84). For psychological wellbeing, scores ranged from 43 to a maximum of 97 (M = 74.52, SD = 14.15). The relationship between mental health status with the use of health services as well as with other need variables can be seen in Table 13. As expected, psychological wellbeing was negatively correlated with psychological distress, $r = -.450$, $p < .05$. Psychological wellbeing was significantly associated with only one measure of health services use - item prescriptions, $r = -.380$, $p < .05$, indicating that those with greater sense of wellbeing were less likely to have bought medication for personal use in the last 12 months period.

Higher distress, on the other hand, was significantly correlated with more physical symptoms, $r = .543$, $p < .01$, and more problems with basic ADLs, $r = .476$, $p < .01$, household ADLs, $r = .494$, $p < .01$, advanced ADLs, $r = .370$. $p < .05$, and lowerbody limitations, $r = .402$, $p < .05$. Interestingly, psychological distress was not significantly related to any of the utilisation measures of health services.

Gender differences were also found on psychological distress with women's average of M = 72.08 (SD = 27.49) higher than the mean for men's score (M = 51.63, SD = 20.29), and on t test analysis, the mean difference was significant, $t(51) = -2.84$, $p < .01$. Not surprisingly, women reported feeling less well (M = 70.67, SD = 14.31) than men (M = 81.42, SD = 11.16), and on t-test analysis, the mean difference was also significant, $t(51) = 2.82$, $p < .01$.

The number of disability days taken by respondents in the last three months due to illness is outlined in Table 15. The sample ratings ranged from 0 to a maximum of 35 days with an average of 3.54 (SD = 7.08). As noted in this table, around half of respondents (52.8%) reported taking no disability days in the last three months. Of those with disability days, 37.7% have taken seven or less days, and the rest have taken 10 or more days.

Table 15: Number of Disability Days Taken in Past 3 Months

Number of days	Frequency	Percent
0	28	52.8
1	2	3.8
2	7	13.2
3	1	1.9
4	2	3.8
5	4	7.5
7	4	7.5
10	1	1.9
20	2	3.8
28	1	1.9
35	1	1.9
Total	**53**	**100.0**

From Table 13, a high number of disability days taken was associated with needing help with household ADLs, r = ..376, p <.05, advanced ADLs, r = .480, p <.01, upperbody limitations, r = .576, p <.01, and lowerbody limitations, r = .564, p <.01. For the use of health services, only bed days taken was significantly related with disability days, r = .509, p <.01, suggesting that the more disability days people have taken in the past three months, the more likely they would have stayed at home sick. To further examine the relationship between disability days and measures of health services use, disability days was recoded to provide two groupings, the disability days group, and the no disability days group. Using t-tests to assess these relationships, the results showed that disability days was significantly associated with spending time at home in bed because of illness - suggesting that those with disability days taken (M = .65, SD = .55) were more likely than those with no disability days taken (M = .24, SD = .38), to have stayed home, $t(51)$ = -3.22, p <.01. Having disability days moreover, means these people (M = 2.39, SD = 3.97) were less likely than their no disability counterparts (M = 6.92, SD = 11.77), to have visited the doctor in the last year, $t(50)$ = 2.10, p <.05.

5.1.4 Health Care Utilisation Measures: Descriptive Statistics:

The total number of visits to the general practitioner in the preceding 12 months range from 0 to 52 with a mean of 5.53 (SD = 9.81). Of the sample, 58.5% had been to the doctor six times or less, and 26.4% had not been to the doctor at all. The maximum number of seeing the doctor 52 times (or once a week in the previous year), was claimed by one respondent. For the rest of the sample, the GP was consulted 30 times by two respondents; and for each of the 26; 24; 15 and 12 times respectively, the GP was seen by a single respondent.

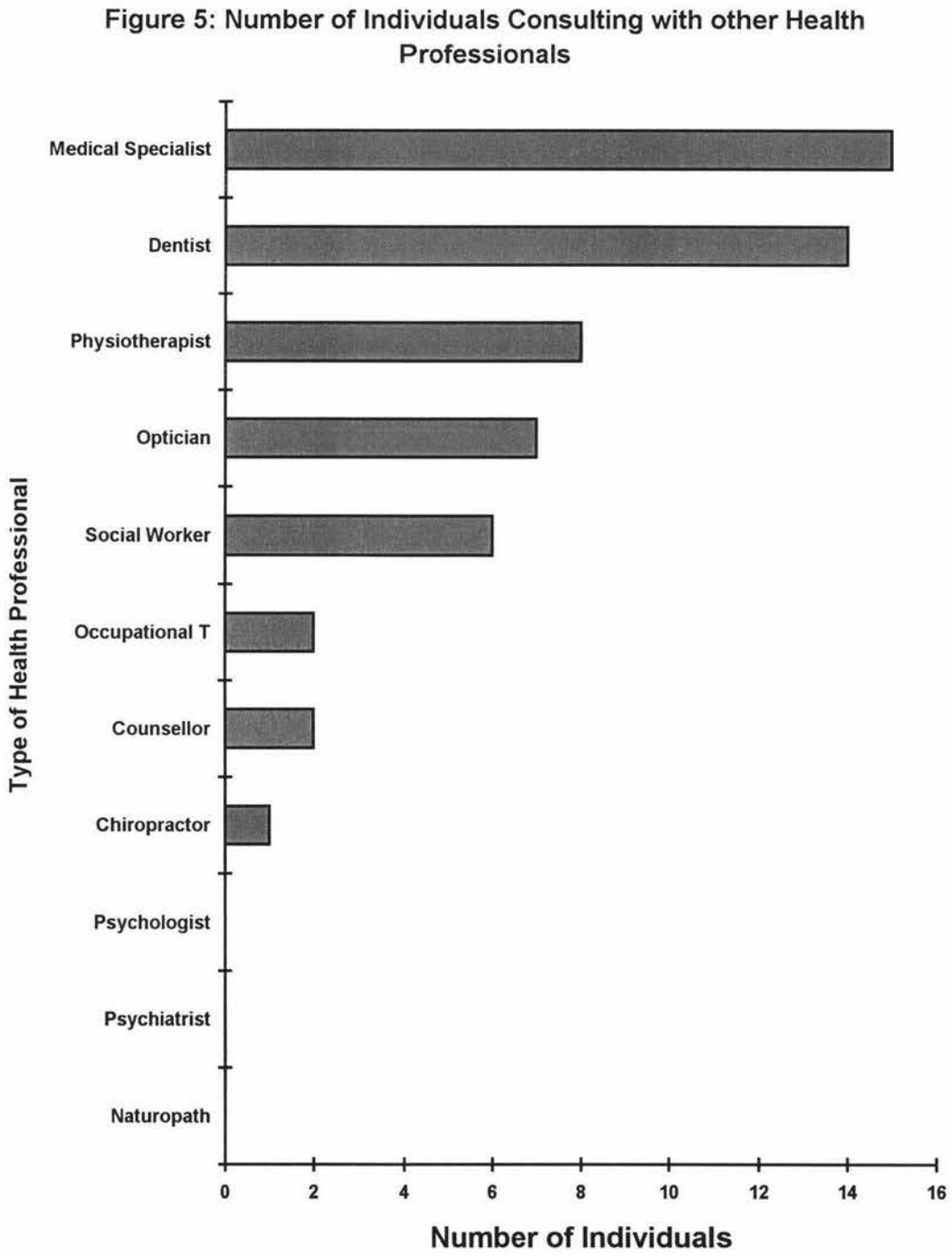
For the number of prescription items obtained over the past 12 months, more respondents (52.8%) were buying one to four prescribed items for their personal use than in any other range. However, some 80% of the sample had used prescription items in the last 12 months period. More information on patterns of use of prescribed items are presented in Table 16.

Table 16: Frequency Distributions of the Number of Prescription Items

Number of Pitems Obtained	Number of Respondents	Percent
None	10	18.9
1 - 4	28	52.8
5 - 9	7	13.2
10 - 14	3	5.7
15+	4	7.5
Missing	1	1.9
Total	**53**	**100.0**

The level of use of other health professionals as other types of services that respondents sought in the past 12 months are presented in Figure 5. From this Figure, the most commonly seen "other health care professionals" consulted by the study participants were medical specialists and dentists. Interestingly, three types of other health care professionals who were never consulted in the past year include Naturopath, Psychiatrist and Psychologist. A number of 22 (41.5%) respondents have not seen a health professional other than the GP, 34% (N = 18) have consulted the health professional once; the rest have seen the health professional 2 or more times, with 5 times being the highest as reported by one participant.

Figure 5: Number of Participants Consulting with Other Health Professionals.



One informal measure of health care services examined in the present study is the number of days respondents spent at home in bed, due to ill health. The sample score ratings ranged from 0 to 25 with the maximum of 60 (as reported by one respondent), with the mean of 5 (SD = 9.94). Some 35% took 7 or less bed days, 16.9% took 10 to 25 days,

and 49% did not take any bed days, thus, an even spread was noted between those who did take bed days and those who did not.

5.2 Oneway ANOVA:

Because of limited variability of responses in data distributions for the dependent variables of prescription items bought and number of days spent at home in bed due to ill-health, these measures of health services utilisation were assessed using a between groups comparison approach of oneway analyses of variance (ANOVA). Thus, each of these dependent variables were trichotomised into high, medium and low groupings; and their respective relationships with need, predisposing, and enabling variables were then examined by comparing group means. These are presented below, with only significant relationships shown.

5.2.1 Prescription items:

Using the need variable of psychological wellbeing, a oneway analysis of variance was conducted on a number of prescription items bought by respondents in the past 12 months. The F test on this analysis indicated that significant differences existed between the groups on psychological wellbeing, $F(2, 49) = 3.45$, $p < .05$, showing that the number of medications bought for personal use in the past 12 months was significantly more for the "less well" or medium group ($M = 76.67$, $SD = 12.78$), than for the "least well" or low group ($M = 66.14$, $SD = 13.92$). This suggests that the less well people feel, the more likely they use prescriptions items.

5.2.2 Days spent at home in bed due to ill health:

The number of days spent at home in bed due to ill health during the last 12 months period is one informal use of health services utilisation investigated in the present study. Following the above procedures, oneway analysis of variance was conducted to examine group differences on a number of bed days taken in the last year using independent variables of disability days, physical symptoms, upperbody limitations, lowerbody limitations, household ADLs, Basic ADLs, and health worry. The results showed that significant differences existed between the groups on all of these variables, significant at

.01 level for health worry, F(2, 50) = 4.71, and lowerbody limitations, F(2, 50) = 4.52; at .05 level for basic ADLs, F(2.50) = 3.02, household ADLs, F(2, 50) = 3.51, upperbody limitations, F(2, 50) = 4.42 and physical symptoms, F(2, 50) = 4.49; and at .001 for disability days, F(2, 50) = 10.59.

The number of bed days taken because of ill-health was significantly more for those in the high physical symptoms group (M = 51.20, SD = 13.89); high upperbody limitations group (M = 2.18, SD = 2.18); high household ADLs group (M = 1.18, SD = 1.47); high basic ADLs group (M = 1.97, SD = 1.09); high lowerbody limitations group (M = 2.90, SD = 1.22); high health worry group (M = 2.88, SD = .86); and high disability days group (M = 11.00, SD = 12.58) - than in any of the corresponding groups.

5.3 Hierarchical Multiple Regression Analyses:

To determine the predictiveness of predisposing, enabling and need characteristics of the behavioural model, two hierarchical multiple regression analyses were undertaken on each of the two remaining measures of health services utilisation also considered to be dependent variables in the study - number of visits to the GP and number of other health professionals seen. One regression analysis was carried out for need characteristics, and a separate one was conducted for predisposing and enabling characteristics. Thus, in all, a total number of four multiple regression analyses were undertaken. Log transformation were applied to normalise the dependent variables before regression analyses were conducted, and mean substitutions for missing values were utilised to make up for limited number of cases. The results of these analyses are presented below.

5.3.1 Visits to the General Practitioner: (Need Factors):

Using a multiple regression analysis, the contribution of need characteristics towards explaining a number of visits to the GP in the last 12 months period was assessed using 7 independent variables. Results are presented in Table 17, and these include standardised beta coefficients for each variable in the equation and the total variance explained by the equation (R-square and adjusted R-square). As noted, R was not statistically different

from zero, F (7, 45) = .93, p >.05, indicating that the contribution of need variables in explaining the number of visits to the GP was nil. Inspection of beta coefficients for each individual variable shows that all were nonsigniificant predictors. The total explained variance of -.009 (adjusted R-square) confirms this result, indicating that need factors did not predict the use of physician services by this group.

Table 17: Multiple Regression for Need factors on number of visits to the General Practitioner, presenting standardised regression coefficients, R, R-square, and adjusted R-square for the sample (N = 53).

Predictors	Beta
Distress	-.021
Wellbeing	-.144
Upperbody limitations	-.059
Household ADLs	.236
Advanced ADLs	-.334
Self rated health	.079
Physical symptoms	-.123
R	**.35**
Total R-square	**.12**
Adjusted R-square	**-.009**

***p <.05, **p <.01, ***p <.001**

5.3.2. Visits to the General Practitioner: (Predisposing and Enabling Factors):

To assess the contribution of predisposing and enabling factors toward explaining the number of GP visits by respondents in the preceding 12 months period, a second multiple regression analysis was conducted. In all, 13 independent variables were entered into the regression equation, with 6 assessing predisposing characteristics and 7 accounting for enabling factors. The results are outlined in Table 18 with standardised beta coefficients for each variable in the regression equation provided. As can be seen from this table, R was again, not significantly different from zero F (13,39) = 1.23, p >.05. However, a marked increase of 5% in total explained variance (adjusted R-square) represents the contribution of predisposing and enabling factors in explaining a number of visits to the GP is noted.

The impact of individual variables throughout the regression analysis are represented by beta coefficients. As can be seen, while none of predisposing variables were significant predictors, two enabling variables, adequacy of income (p <.01) and waiting time (p

<.05) were significant predictors of GP services. Thus, the likelihood of seeking physician services or visiting the GP is higher for people who cannot manage on their income, but less likely for those who have long waiting times before being seeing by the GP. It should be noted that since R was nonsignificant, these results should not be overinterpreted.

Table 18: Multiple Regression for Predisposing and Enabling Factors on a number of visits to the GP, presenting standardised regression coefficients, R, R-square, and adjusted R-square for the sample (N = 53).

Predictors	Beta coefficients
Predisposing Factors	
Age	.171
Sex	.213
Health control	.007
Social contacts	-.012
Life events	.267
Time in area of residence	-.134
Enabling Factors	
General satisfaction	.158
Quality satisfaction	-.079
Adequacy of income	-.454**
Length of time seeing same doctor	.129
Fees	-.177
Community services card	.194
Waiting time	-.368*
R	**.54**
Total R-square	**.29**
Adjusted R-square	**.05**

***p <.05, **p <.01, ***p <.001**

5.3.3. Number of Other Health Professionals seen: (Need factors):

A multiple regression analysis was carried out to assess the impact of need factors on a number of health professionals other than GPs, consulted by the study participants in the preceding 12 months period. Using the same procedure as above, a number of 7 independent variables measuring need characteristics were entered into the regression equation. The dependent variable here was the number of health professionals consulted. Results are presented in Table 19 with standardised beta coefficients for each variable presented. As noted in this table, R was statistically different from zero, F (7, 45) = 2.40, p <.05. Need variables explained 15% of variance (adjusted R-square) in the number of other health professionals seen by respondents.

In examining the effects of individual variables on the regression equation, limitations of upperbody functions ($p < .05$) proved to be the only significant predictor variable. According to the model then, experiencing very little or no difficulties with such body activities as sitting for two hours, reaching up over the head or reaching out as if to shake someone's hand, as well as using fingers to grasp objects, means that these people were less likely to have sought help from other health professionals in the preceding 12 months period.

Table 19: Multiple Regression of Need Factors on number of other health professionals sought, showing standardised regression coefficients, R, R-square and adjusted R-square for the sample group (53).

Predictors	Beta coefficients
Physical symptoms	-.203
Wellbeing	.052
Advanced ADLs	.184
Self rated health	.023
Household ADLs	-.058
Distress	.289
Upperbody limitations	-.465*
R	**.52**
Total R-square	**.27**
Adjusted R-square	**.15**

***p <.05, **p <.01, ***p <.001**

5.3.4. Number of other Health Professionals seen: (Predisposing and Enabling Factors):

A multiple regression analysis was also conducted to examine the influence of predisposing and enabling characteristics toward explaining a number of other health professionals seen by the group. A total number of 13 variables were entered into the regression equation with 7 representing predisposing characteristics and 6 accounting for enabling characteristics. Results are outlined in Table 20 with standardised regression coefficients for each variable in the regression equation provided. As Table 20 shows, R was not statistically different from zero, F (13, 39) = 1.04, $p > .05$; and the total amount of 1% in explained variance (adjusted R-square) in a number of other health professionals seen, represent a combined effects of predisposing and enabling factors.

In investigating the influence of individual variables on the regression equation, a predisposing variable of health worry ($p < .05$) proved to be the sole significant predictor of other health professionals seen. In this way, higher degree of worry about their health means that these people were more likely to have sought help or advice from other health professionals during the past 12 months period. Since R was nonsignificant, however, this result should not be taken into account.

Table 20: Multiple regression of predisposing and enabling characteristics on number of other health professionals consulted, showing standardised regression coefficients, R, R-square and adjusted R-square for the sample group (N = 53).

Predictors	Beta coefficients
Predisposing Characteristics	
Age	-.206
Sex	.081
Health worry	.342*
Health control	.104
Social contacts	.153
Life events	-.208
Time in area of residence	.007
Enabling characteristics	
Adequacy of income	-.091
Income	-.082
Length of time seeing same doctor	-.119
Fees	-.035
Community services card	.021
Waiting time	.226
R	**.50**
Total R-square	**.25**
Adjusted R-square	**.01**

***p <.05, **p <.01, ***p <.001**

6. Findings and Discussion:

The present study explored relationships hypothesized in Andersen's (1968) behavioural model, using extra measures of predisposing, enabling, need and health services use, in an attempt to provide insight into health behaviour and utilisation patterns of Pacific Peoples in New Zealand. The ways in which the findings of the study address this goal are presented in the following manner:

The major finding of the study from the regression analyses was that the need variable of upperbody limitations predicted the use of other health professionals seen by this group, but no significant predictors for GP visits were identified. The analysis of variance also showed that psychological wellbeing was related to item prescriptions, and that, except for advanced ADLs, the activity of daily living related variables, body functioning limitations related variables, health worry and disability days - all need variables - were significantly related to bed days taken. These findings add support to the evidence that need characteristics remains a primary determinant of the utilisation of health services (eg Wolinsky & Arnold, 1988; Wolinsky et al., 1989).

6.1 Utilisation Patterns and Determinants:

6.1.1 Issues of Access:

Given that most respondents amongst this group have a regular doctor, one important finding from bivariate analyses showed that a substantial number of people with greater health needs are not making full use of this and other health care services, and this points to issues of access. From enabling variables, the evidence that, adequacy of income, doctors fees, the length of time being with the same doctor and waiting time were all significantly related to utilisation of health services in various degrees, provides some substance for the importance of access (or lack of it) to health care services, as echoed in the New Zealand literature (eg Clarkson et al., 1988; Crompton, 1993; Dixon et al., 1994; Gribben, 1992; Lewis, 1988; Lunt et al., 1993; Malcolm & Clayton, 1988); and elsewhere (eg Coreil, Augustin, Hasley, & Holt, 1994; Damon-Rodrigiez, Wallace, & Kington, 1994; Davis, 1991; Fosu, 1989; Funkhouser & Moser, 1990; Hawthorne, 1994; Leclere et al., 1994; Saltman & Von Otter, 1995).

Whilst no relationship between appointment delays and GP visits has been noted, the evidence that the likelihood of visiting the GP more often in the last 12 months period was less for those who waited long before being seen by the doctor, supports the finding in Gribben's (1992) study; and this finding, in particular, raises a concern about accommodation issues of access amongst this group.

There was no evidence for acceptability issues of access. However, the finding that those who have been seen by the same doctor for a long period of time were less likely to have visited the GP more often, but more likely to have stayed home in bed, is intriguing. Why this might be the case is unclear; however, a few possibilities are suggested: First, because a relationship with their GP has been established over time, this may mean people are more likely to be aware of the doctor's expertise and capabilities. People, on the other hand, may well be experts in their own right when considering their own physiology, and when considering survival instincts and capabilities in terms of putting up with illness. Therefore, if people choose to stay at home in bed rather than visiting the doctor, it may suggest that the doctor may not be able to meet their health needs. Conversely, if visiting the doctor means prescribing more medications (as is often the case in primary health care services), then the finding from bivariate analysis that greater sense of wellbeing is associated with taking little or no prescription items may support this assertion. One local GP claimed that in his experience with Pacific Islands clientele, they are often reluctant to take prescribed medication, and it was difficult to convince them of the importance of taking these medication (personal communication, May, 1996).

Further evidence which may point in the same direction was the finding that those who experienced more life events were less likely to have sought advice or help from other health professionals, but more likely to have stayed home in bed. Given that family problems was the most commonly reported life event amongst the group, if in fact individuals with these problems are not making use of health care professionals such as the counsellor or psychologist, then where do they go for help? Why do people not make use of these health care services? The answers to these questions are simply beyond the scope of this study, however, it is possible that the use of health care services may be constrained by people's lack of knowledge and awareness of services, and/or how they can benefit from the services (eg Public Health Commission, 1994). Health needs, on the other hand, is determined not only by the presence of physical and/or mental disease but also by the cultural perception of illness (Leclere et al., 1994; .Mutchler & Burr, 1991; Schur, Bernstein & Berk, 1987; Wolinsky et al., 1989); and this leads to a second possibility, the role of culture.

Culture is probably a major determinant in people's lives (Waldegrave, 1990), and this may explain (or at least in part), why people may prefer to stay home rather than seeking GP services or help from other health professionals. It is the case with Pacific Peoples that in dealing with life events, they often consult with their own community leaders, notably the church minister, or deal with problems amongst themselves; often within the context of the extended family, in which case, guidance and direction are provided by parents or grandparents. This suggests that people may find solace and strength in being with others who share common stories and experiences (eg Jacobs & Goodman, 1989); or, in Jarvis's idea (1971, in Albee, 1980), people should be with members of their own culture and/or social class, if they are to function fully. This being the case, then this finding on acceptability issues of access lends some support to the experience of Pacific People's utilisation of health services documented by the Public Health Commission, (1992; 1994).

However, this is not to suggest that Pacific Peoples are most effective when working with their own. Rather, two implications for acceptability issues of access with respect to the provisions of health care services are suggested. First, given the multicultural diversity of New Zealand society, how culturally appropriate and/or sensitive are the delivery of health services in this country? How culturally aware and/or competent are health professionals and practitioners within their lines of duty? Indeed, it is not enough to be aware of different cultural groups without understanding the socio-political history that minorities have experienced. The oppression of women and their struggle for equity; Maori grievances on Treaty of Waitangi issues; the dawn raids on Pacific Islands overstayers are but some of the different faces of colonisation which may well affect people lives. The nature of such life events as Carter (1991, in Hawthorne, 1994) noted, cannot be dealt with through studying the individual or cultural differences. In general, it is suggested that health professionals should be aware of their own worldviews; and that, they be able to understand and accept the worldview of the culturally different. Simply put, appreciate and respect what makes individuals and groups different from each other.

Second, Pacific Islands people are clearly under-represented in the health profession (Public Health Commission, 1994); therefore, providing innovations or means of attracting more people to the health field is imperative. It is crucial that worldviews of

health and wellbeing which are culturally different, be legitimised by being by being incorporated into both theory and practical training of health professionals in this country, if equality and equity of access to health services utilisation are to be improved.

On the flip side of the above argument, the question may arise as to why people maintain or keep seeing the same doctor if their health needs are not being met. One explanation for this inconsistency is that it is often the case with Pacific Peoples that the doctor has status, and like anyone with social status (eg minister or teacher), these people are elevated to the highest level of respect. As such, they are often perceived as experts in their own respective fields, and hence, questioning or doubting the "experts" can be seen as an insult. Thus, if individuals maintain the same GP regardless of whether their needs are (or are not) met, it may be the case of maintaining this culturally constructed mentality.

6.1.2 Socioeconomic Status and Health Status:

The relationship between affordability features of access and utilisation of health care services was not significant. However, the finding that adequacy of income was related to health care services amongst this group highlighted concern with lack of familial resources, and this has important implications for the health system. Given low reported levels of income and paid work, and that some 83% of the sample have no health insurance, one interpretation here is that, lack of access to these resources or means of health care, means that people are unable to maintain health states at an optimal level; and this in turn, may contribute to higher risks of illness. Hence, people are more likely to seek physician services. To put it in Mechanic's (1986, in Funkhouser & Moser, 1990), own words ... "poverty and poor health reinforce one another"... (p53). This being the case, then this finding adds weight to the socioeconomic gap argument in relation to health status (eg Davis, 1991). An examination of the causal link between socioeconomic status and health status is beyond the scope of the present study. However, since adequacy of income is a subjective measure of income; and income per se is a proxy of socioeconomic status (Johnson et al., 1995), the implication here is that health status and health care services utilisation levels are strongly associated with socioeconomic status - a finding which is well documented elsewhere (eg Public Health Commission, 1994; Mutchler & Burr, 1991; Nelson, 1994; Slivinske & Fitch, 1992; Scott et al., 1996; Penn et al., 1995; Waddell & Petersen, 1994).

A discrepancy within this finding, however, is that people reported high satisfaction with standards of living, and that, they can manage on their income despite reporting low levels of income and paid work. The positive correlation between adequacy of income and income seems to suggest that people were "content" with what they got (whether it be $13,000 or $30,000), not how much they should get. In relation to health care, it may be that people do not budget or put money aside for this purpose, as they often seek alternative services such as traditional medicine, which may well be at a minimal cost (if any), and visit the doctor only as a last resort when other services fail (Public Health Commission (1994). Alternatively, the availability of the fanau (family) support network often means sharing costs, although social contacts did not predict the use of health care services.

On the other hand, it is possible that people may be misrepresenting their standards of living or managing on their income, and this may point to the methodologies being adopted in gathering this information. For example, the structured nature of interview, means that respondents were asked a particular set of questionnaires. This, strategy in itself, may have communicated an implicit message to respondents that they can only answer in a certain way. This being the case, then participant expectations may followed, which may have inevitably led to social desirability factors or demand characteristics. As a result, participants were more likely to have answered in a way they perceived the researcher wanted them to, and thus, leaving their own reality untold.

6.1.3 Gender Differences:

The second major finding that warrants further discussion is sex differences in a number of health behaviours. Whilst no evidence of gender differences in the use of health care services was found in regression analyses, bivariate analysis however, reveals the following: Women earn less income than men; they find GP fees restricted access to physician services more than men; they experience longer waiting times before being seen by the GP; they find the doctors fee is a "barrier" which stops them from seeing the doctor even if they want to; they feel less well; and hence, they feel more distressed than men. The relationship between sex and health beliefs (health control and health worry), although it did not reach significance, was nevertheless pointing to the same direction - that is - women have more health worries and less control over their future health.

Similarly, men on average, have higher educational qualifications than women. The direction of these relationships - although did not reach significance - is a concern in that, it clearly points to women suffering from inequitable access, as defined by Andersen (1995). To Andersen, inequitable access occurs when social structure (in this case education), enabling resources (eg income), and health beliefs determine who gets health care.

On the basis of gender, these inequalities may also be explained by another social process; that is, the link between gender as a social construct and social institutions such as health care services, the labour market, and the state, suggests that they all interact to maintain inequalities in power relations between the sexes (eg Spender, 1981, in O'Neill, 1992). Indeed, this points to the fundamental structures and policies which underpin the provision of health care services.

6.2 The Predictiveness of the Model:

The second goal of the study was to explore the utility of the model in predicting health services use, by adopting additional measures of predisposing, enabling, need and health services utilisation.

As well as using a traditional measure of services utilisation in the number of GP visits, the application of measures of the number of other health professionals consulted and the number of prescription items used were necessary to capture a wider operationalisation of health services use, along with one informal measure of health care use - number of days in bed, sick. These measures, however, were skewed, as in other studies, with a substantial number of respondents using none, or very few of the health services modes. Whilst transformations of data often helps with this problem, the fact that these measures were consistently skewed, suggests that this model may only be useful in predicting moderate consumers of health care services - a point noted by others (eg Wolinsky & Coe, 1984; Wolinsky & Johnson, 1991).

For the prediction of health services utilisation using extra measures of predisposing, enabling and need factors, the major finding of the study was that these additional variables did not enhance the fit of the model. In predicting a number of other health professionals seen by respondents, need variables produced a total of 15% explained variance with R being significant, and that upperbody limitations proved to be a significant predictor variable. The impact of predisposing and enabling variables, in contrast, amounted to only 1% of explained variance with health worry proving to be a significant predictor but R was nonsignificant; thus, this evidence indicates that need characteristics are major determinants of health services utilisation - supporting the findings of other studies (eg Wolinsky & Arnold, 1988; Wolinsky et al., 1989). The regression results on GP visits, on the other hand, showed that need variables did not predict the use of this health service, and that enabling variables of adequacy of income and waiting time, being significant predictors, made up the total variance of 5% in explaining the number of GP visits. However, the regression results were nonsignificant. These findings then, appear to be in line with Wolinsky and Johnson's (1991) assertion who noted that ..."substantial improvements in R-square will not likely to result from further refinement or proliferation of traditional measures of the predisposing, enabling and need characteristics"... (pS354). This being the case, possible reasons for lack of improvement can be examined by focusing on the contribution of additional variables used in this study.

6.2.1 Life Events and Social Contacts:

As an indicator of the individual's psychosocial reality, the number of life events experienced did not reach significance in predicting the use of other health professionals. Bivariate analyses, however, showed that this variable was significantly related to the use of other health professionals. Why this was the case is unclear. However, given the direction of the relationship between life events and the use of other professionals was consistent in all analyses, it may be the case of the small number of cases in the study. Using a larger representative sample therefore may increase the predictive value for life events.

Social contacts, in contrast, was found to be nonsignificantly related to all measures of health care services in both regression and bivariate analyses. This finding is intriguing,

given the relatively higher degree of social contacts reported by this group. The lack of predictiveness related to the measure of social contacts in the study is not clear; however, it may be that the measures used here were not sensitive enough to capture a precise representation of the psychosocial context hoped for. If this is the case, then two possibilities are suggested: One, other activities may be incorporated into this construct such as sports activities of playing cricket or volleyball. These are both favourite activities of Pacific Islands people, and ones which people of all age can participate, and hence, these may not only represent social activities that are meaningful to the group, but also to the researcher who is already aware of what s/he is looking for. Two, the quality of social networks or social contacts available that reflects social support, is associated with better health outcomes (eg Maxwell, Flett & Colhoun, 1989; 1990). Thus, future studies may benefit from introducing measures which emphasise the quality of social contacts.

6.2.2 Psychological Distress and Psychological Wellbeing:

The ongoing debate on the link between mental health status via wellbeing and distress, and the use of health care services was also investigated. None of these variables predicted utilisation of health services on regression analyses. In bivariate analyses, however, wellbeing was significantly related to prescription items and bed days taken - suggesting that a greater sense of wellbeing was associated with taking less medication but spending more time at home in bed. Distress, in contrast, was not significantly related to any of the measures of health care services. If this is an indication that there is no difference between the "psychologically distressed" and the "non-distressed" in their use of health services, then this finding is supported elsewhere (eg Berkanovic & Hurwicz, 1989; Wolinsky et al., 1983).

It remains unclear why wellbeing and distress did not predict the use of health services. One speculation here, however, is that given differences in cultural perceptions of health and illness (eg Leclere et al., 1994), it is possible that the concept of mental health may have been dealt with from the cultural views of respondents when mental health questionnaires were filled in. If this is the case, then construct validity of mental health becomes suspect. Does the construct of interest fully capture or reflect the reality of the group under study? To put it another way, do items measuring the construct of mental

health show a true representation of the notion of mental health as perceived by Pacific Peoples? It is suggested that future research may benefit from checking phenomena or constructs of interest with the group under study as a way of validating instruments or measures, before embarking on the investigation; especially when studying the culturally different.

6.2.3 Satisfaction with Physician Services:

Both general satisfaction with physician services and satisfaction with the quality of GP did not predict GP visits. Similarly bivariate analyses showed that the relationship between these variables and measures of health care services were nonsignificant. However, it should be noted that although general satisfaction did not reach significance, it was still in the expected direction (ie higher satisfaction with physician services leads to more use of these services) - a finding that is well documented by others (eg Buller & Buller, 1987; Gribben, 1993; Robbins et al., 1993; Roughmann, Hengst, & Zastowny, 1979; Gray, 1980; Weiss, 1988).

Satisfaction with quality of GP, on the other hand, was in the opposite direction (ie more satisfaction leads to less use of services). The reasons for this discrepancy remain unclear. In Robbins et al's., (1993) study, they found that satisfaction with GP quality/competency were positively associated with health education, treatment effects, physical examinations. Whilst health education and treatment effects may be useful measures of GP quality, physical examination may not be appropriate in Pacific Islands traditions, in that, this is one area of high sensitivity in health practice. This may provide one explanation of why this variable did not predict utilisation of physician services. It has been noted that the body in Pacific Islands conception is considered "sacred", and therefore, to expose it to a stranger is seen as culturally inappropriate. If this is the case, then the validity of the measure of satisfaction with GP quality used in the study becomes suspect in that, it may be culturally biased, culturally inappropriate, or both.

On the other hand, Gribben's (1993) study, found that Polynesians were amongst those who reported the lowest satisfaction with access to GP services; and he concluded that GPs could improve patient satisfaction by decreasing charges and waiting times. Given

low levels of income reported by this group, it may be the case that some people equate the quality of GP with barriers to accessing health services such as doctors fees.

As noted above, given that cultural norms often make individuals reluctant to criticise and question their physicians regardless of whether they are satisfied with services or not, it is suggested that measures of GP quality should also be sensitive (and therefore relevant) to the group under study. One example here is the physician's communication style which can be either affiliative (eg show empathy and caring, or spending more time expressing medical treatment to patients), or controlling (eg lack of clear-cut explanations on diagnosis, or being authoritative) (Buller & Buller, 1987). In this way, the assessments of physician's communication can be associated with the evaluation of medical care, suggesting that competence in communication may be a facet of medical competence (Buller & Buller, 1987). Such an instrument may be useful in capturing Pacific People's own expectations of an ideal GP quality.

6.2.4. Need, Predisposing and Enabling Characteristics:

The influence of need variables in determining health services utilisation was convincing in this study, or at least in predicting the number of other health professionals seen. However, given that other measures of health services use have not been tested, the extent to which predisposing and enabling characteristics predict the use of health services in these other utilisation measures remains unknown.

These findings then, did not provide support and justification in adopting additional measures of various components of the behavioural model to examine utilisation behaviours and services use of Pacific Peoples in New Zealand.

6.2.5. Measures of Health Services Utilisation:

The inclusion of measures of other health professionals sought, and prescription items obtained from the chemist was an attempt to capture a wider picture of utilisation of health services. The use of other health professionals did not provide improvement in the fit of the model. The distributions of data within the measure of item prescriptions (along with a measure of bed days taken) proved lack in variability, and consequently, assessing the predictiveness of need, predisposing and enabling characteristics of the

model using regressions analysis was not appropriate. However, given that all four measures used in the study were significantly skewed, it may be the case of employing a population sample large enough so that normal distributed data of frequent health services users can be considered, and that the non-frequent services users may be ignored.

7. Limitations of the Study and Suggestions for Future Research:

The present study has a number of limitations which must be acknowledged. The small sample size raises issues of statistical power (McClelland & Judd, 1993; Rosnow & Rosenthal, 1989a,b). Dichotomising variables of a small sample may well reduce relationship effects such that a relationship may be suggested where none exists in fact (eg Scott et al., 1996). Future research in this area might benefit from employing a larger and more representativeness of population of interest. Treating the sample as a homogeneous group for analysis purposes may be dangerously misleading since cultures and languages of Pacific Peoples are quite distinctive from each other. Culture is a major determinant in people's lives (Waldegrave, 1990), and this implies that the results of this study cannot be taken as reflecting the realities of all Pacific Islands cultures. To be sure, this study is exploratory in nature, and the findings provide a limited cross-sectional "snapshot" of a particular sample at a certain period of time. Regression analyses as used in this study reveal relationships between variables, but they do not represent cause and effect; and thus, the extent and nature of causal relationships is far from certain.

Given the small sample in this study, the total variance accounted for in alternative measures of health services utilisation used, may not be a true indication of the utility of the model in predicting use of more discretionary health services. However, this study does not fully represent a wide range of health services believed to be accessed by Pacific Islands people, if traditional forms of health services are taken into account. On the other hand, whilst the inclusion of the measure of other health professionals reflects a broader view of health services, the actual number of visits to various health professionals was ignored. Therefore, more health services that truly reflect the reality

of Pacific Islands people should be examined, if the utility of the model is to be severely tested. Future research then, should explore alternative health services such as the use of traditional healing practices in Pacific Islands communities. The use of other health care professionals and prescriptions may also be further explored such as the number of visits to the counsellor or psychologist; and perhaps the number of consultations with a chemist, can be closely examined.

Whilst one significant predictor of health services use has been identified in this study, it may be useful to get insight into as to why it predicts the use of other health professionals. Further study, moreover, should take this line of investigation by considering the role of mental health status in relation to the use of health care services. For example, the link between wellbeing and distress in predicting health services use is far from being resolved. The limitations of this study mean that the influences of life events and social contacts on health services utilisation; and the role of satisfaction with physician services on GP services utilisation, have not been examined thoroughly and therefore these research questions should be further explored.

It has been noted that inconsistencies that existed between what people reported and the actual findings of the study may be attributed to artifacts of the methodologies used in gathering data. Given the quantitative nature of inquiry adopted in this study, expressions of phenomena of interest via items and questionnaires can easily be misunderstood. As Gribben (1992) found out in his study, responses to an item which represents patient fees, indicated that participants' answers tended to reflect dissatisfaction with GP charges, rather than the actual effects on services use. Given the "oral" nature and traditions of Pacific Islands people, such inconsistencies can be dealt with using other methods of inquiry. Future research therefore, may benefit from adopting both qualitative and quantitative methodologies. In this way, a more in-depth look into the health behaviours of this group (and therefore a chance for participants to clarify related issues), will be made salient. Phenomena of interest should be represented both in questionnaires to be filled in (quantitative), as well as in a few in-depth questions for interview (qualitative). Having a chance of tapping into a certain behaviour more than once is more likely to increase the chance of capturing people's reality, and hence, decreases the likelihood of inconsistencies. Moreover, it may be culturally relevant

and/or appropriate for this group to talk about their experience, rather than fragmenting them onto paper or small boxes.

In summary then, the study reported herein has not achieved its aims in that, the replication and expansion of Wolinsky and Johnson's (1991) study using the behavioural model was not possible. However, some utilisation patterns of services use of Pacific Islands people have been identified through the examination of predisposing, enabling and need factors as defined in the Andersen behavioural model of health services utilisation. Useful correlates of health care use have been presented, and suggestions for future research have been provided. Future studies could concentrate on further refinements in the operationalisation of these factors in terms of definitions and measurements; and the "end products" must reflect the everyday reality of the group under study. In other words, construct validity, as already noted, is imperative here. Ultimately, however, future research efforts should focus on breaking down barriers that impede (and hence, perpetuate inequity in) the use of health care services. As Scott et al., (1996) noted, utilisation of health services use ... "may be equitable at the point of first contact, but not thereafter" ... (p45). Indeed, identifying health behaviours and utilisation patterns of Pacific Islands people is the point of initial contact. The direction and path taken by future research is therefore crucial, if the struggle for equity and equality in the utilisation of health care services by marginalised groups such as Pacific Peoples, are to be achieved. Research, in my view, is a social process; an exercise of power; a political act, and a means through which greater awareness of individuals as social beings is raised. Youngman (1985) stresses the importance of our social beings when he quotes Marx: "It is not the consciousness of men that determines their being, but, on the contrary, their social being that determines their consciousness" ... (p155). It follows from the above that researchers are in a position to act as advocates and empowering agents for the poor, and the marginalised. In the final analysis then, if we are not part of the solution, then we may well be part of the problem.

8. References

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