FACTORS AFFECTING NON-RESPONSE TO PERCEIVED NEEDS FOR HEALTH SERVICES UTILIZATION IN CHILE

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Background

It has been well established that subgroups within any population exhibit widely varying rates of health services utilization. Some of the reasons for these differentials are likewise well-known. Young children and elderly persons, as well as pregnant women have special needs for care; inadequate coverage of services in rural areas further affects utilization; family income affects ability to pay and consequently consumption, including consumption of health care; etc.

In spite of such broad understanding, however, detailed knowledge in this area is really quite limited because community health surveys and other studies have usually focussed upon users of the health services and have paid limited attention at best to non-users. An exception is a national health survey recently conducted in Chile which seriously considered both the need and the demand for health care, thereby providing an excellent opportunity for analysis of the difference between the two, i.e., the non-utilization of services by those with a perceived need for them. Such analysis is the subject of the present paper.

Data Base for Analysis

Data for the analysis were compiled as part of a national labor survey conducted routinely by the Chilean government among a random sample of approximately 1 in every 200 households in each of the country's defined 106 geographical areas. The characteristics and major findings of this study are reported elsewhere.[1] A special health questionnaire was administered in the survey conducted from October 1967 to January 1968, and this produced information from 45,386 respondents concerning disabilities which resulted in lost time from normal activities,[2] visits to physicians and dentists, and expenditures on drugs during the two weeks prior to interview. In addition, respondents were asked whether they desired but did not obtain physician or dental services during this period, along with the reason for such failure.

Overall Results

In all 4,615 individuals (10.2 percent) reported not receiving desired physician services and 4,129 (9.1 percent) reported the same regarding dental attention. The unmet demand for physicians' services was further analyzed according to whether the respondent had been disabled, had purchased drugs, or had any physician visits. The results, presented in Table 1, indicate that unmet demand was

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[1] T.L. Hall, "Chile Health Manpower Study: Methods and Problems," International Journal of Health Services, 1(2):166-184 (May 1971).

[2] Disability information was not recorded for children under the age of five because of the difficulty of defining activity impairment in this young age group.

especially high (58.6 percent) among those who were disabled and had purchased drugs but had received no physician services at all. The table further shows that nearly one-fourth of drug purchasers felt an unmet demand for physician care, whereas the rate of unmet demand was only 7 percent among non-purchasers of drugs. Thus it appears that the pharmacy served as a partial, though incomplete, substitute for care by a physician.

Reasons for Failure to Receive Care

Next we look at the total cases of unmet demand for physician and dental services according to reasons given for failure to obtain the services. The eight categories of reasons listed in Table 2 are ranked approximately in order of degree of constraint from access to the services. The first three categories might be considered major constraints because of financial or locational inaccessibility, whereas the constraints at the bottom of the list could have been overcome if the problems had been considered serious enough.

The tabulated results indicate that financial limitations were by far the most important deterrent to the seeking of care, especially dental care. The first three reasons for unmet demand accounted for more than half of the cases of both physician and dental services unmet need. Among the other categories, only "patient lack of time" was a major cause of unfulfilled demand, and this can hardly be considered evidence of severe need.

χ^2 Analysis of Socio-Demographic Factors

The foregoing conclusions based upon the total of respondents sampled cannot necessarily be assumed equally applicable to each of the socio-demographic subgroups surveyed. In examining intra-population differences six independent variables were considered as follows:

1. residence location (Santiago; other urban areas; rural areas)
2. per capita monthly income (low - under 75E°; medium - 75 to 149E°; high - 150E° and above)
3. sex
4. age (0-4; 5-14; 15-49; 50 and above)
5. education (less than 4 years; 4-9 years; 10 years or more)
6. insurance benefit status (national social insurance scheme with limited coverage; other schemes with generally superior coverage; none)

Because of the large numbers of observations, we see in Table 3 that all of the χ^2 tests on these socio-demographic variables produced highly significant results. This is especially true with respect to the age factor in particular and unmet physician demand in general. Detailed analysis of the age differences in Table 3 reveals that the older population groups were especially lacking in desired services; in fact, nearly one-fifth of the population aged 50 and above failed to receive desired physician care in the two week period prior to interview.

Analysis by residence location shows, as expected, that Santiago residents reported relatively little unmet demand. Somewhat surprisingly, however, rural residents reported slightly less unmet demand than residents of urban areas outside Santiago. Perhaps the rural population was reconciled to the limited availability of services and consequently discounted the need for them.

Recalling the relative importance of financial considerations in the overall assessment of unmet demand, it is not surprising to find that the unfulfilled demand for physician services varied inversely with per capita income level. It is interesting to observe, however, the somewhat higher level of awareness of the importance of dental services among the higher income groups. Similar patterns were found among the higher education groups, undoubtedly as a result of the correlation between education and income.

Finally we observe in Table 3 that females had a greater awareness of unmet demand than males, and those without any insurance coverage whatsoever also exhibited a relatively high level of unmet demand. The latter finding again suggests the importance of financial considerations.

Although tabular results have not been presented here, we further examined socio-demographic differences in terms of the specific reasons given for unfulfilled demand. Many of the differences noted at this level of analysis were predictable. For example, financial constraints were more of a factor for individuals aged 50

and above than for younger persons, and inaccessibility of services was reported relatively at least seven times as often by the rural population as by urban residents. Certain other differences were less predictable and therefore merit elaboration. Patient lack of time was a substantially more common complaint of high-income, more highly educated urban residents than of others. In addition, although failure to seek care because of the expectation of excessive waiting time was reported by only two percent of all respondents, large differences were noted within age and insurance-benefit groups. Waiting time for child care was reported relatively one-third as often as care for adults in the case of physician services and one-fourth as often in the case of dental services. With respect to either type of care beneficiaries of the national social insurance scheme were 30 percent more likely than others to report a concern for waiting time.

Multisort Analysis of Socio-Demographic Factors

As has already been indicated, separate analysis of each socio-demographic factor is not entirely definitive, since one cannot be certain whether observed differences are due to the factor being scrutinized (such as income) or others with which it is correlated (such as education). This suggests the need for some form of multivariate analysis in which the various main effects and interactions can be isolated. In previous studies[3] the Multisort

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[3] See for example: William A. Reinke and Timothy D. Baker, "Measuring Effects of Demographic Variables on Health Services Utilization," Health Services Research, 2(1):61-75 (Spring 1967).

technique has proved useful in this regard, it has therefore been applied to the present body of data.

The Multisort approach is similar in many respects to analysis of variance, including the calculation of "F" ratios for analysis of the significance of all main effects and interactions. Thus it provides for the examination of variances among the categories within each of the independent variables and also among cell means representing various combinations of variables. In the process of analysis mean values are weighted differentially according to the number of observations on which each mean is based.

Table 4 lists the Multisort "F" ratios obtained from the analysis of all main effects and first-order interactions associated with the two dependent variables of interest: proportion of the population subgroup with unmet physician demand and proportion with unmet dental services demand. As in the earlier χ^2 analysis, variation in unmet demand for physician services tends to be more significant than that for dental services, although age differences are highly significant in both cases. The Multisort results, however, provide certain insights into the nature and complexity of the effects not afforded by the χ^2 analysis.

When the independent variables are considered jointly, for example, the main effect of income disappears, whereas the effect of education is confirmed. In the case of unmet dental demand, however, the influence of education appears as an interaction with residence location. Further analysis of this interaction (based upon computer results not recorded here) reveals that the effect

of education was substantial only in Santiago. In that location higher than average levels of unmet dental demand were exhibited by the least educated, probably a reflection of the accumulation of dental problems, and by the most highly educated, perhaps a reflection of increased concern for dental health.

Apart from the influence of age and sex on unmet physician demand, which deserves special consideration, the magnitude of each of the significant main effects is presented in Table 5. In recording differences among categories of any independent variable it was assumed that all other variables were held constant at their mean values. Table 5 is thus a refinement of the analysis presented in Table 3.

With one interesting exception the results of Table 5 are similar to the corresponding results of Table 3, although the adjustment for other factors incorporated into Table 5 permits the results therein to be treated with greater confidence. The exceptional case concerns the unmet physician demand among those without insurance coverage. The adjusted rate (8.8 percent) in Table 5 is considerably lower than the unadjusted rate (12.4 percent), suggesting that unmet demand within this group is largely a function of the peculiar age, income, or other characteristics of the group, rather than ineligibility for insurance benefits as such. It is possible, therefore, that if members of this group were granted insurance benefits their utilization of physician services might not increase as dramatically as might be first anticipated.

Another interesting finding concerning insurance benefit status was the significant second-order interaction[4] involving benefit status, residence location, and income in relation to unmet dental demand. The interaction effect was found to be largely restricted to those without insurance coverage, and within this group the level of unmet demand increased with increasing income in Santiago, whereas the reverse was true elsewhere, especially in the rural areas. This is perhaps another case in which perceived need was related to degree of awareness of the importance of dental health and the availability of means for attaining it.

In analyzing the major differences in unmet physician demand by age and sex, the interaction of these two variables must be considered along with their main effects. The combined influences, presented in Figure 1, indicate that the greater unmet demand of females is confined to the adult age groups. Although this finding might be expected for females in the child-bearing ages, it is interesting to note that the sex difference extends to the age group of 50 and above as well.

Concluding Remarks

The foregoing analysis of unmet perceived demand for physician and dental services in Chile has revealed major differences in the level of unmet demand among various segments of the population. The multivariate analysis has been especially informative in describing

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[4] All second-order interactions were calculated and tested for significance. Since the one reported here was the only one found to be of major importance, however, the "F" ratios for these second-order interactions were not included in Table 4.

the nature and extent of these differences, which include important interaction effects. In general, it appears that differences are attributable to varying degrees of financial and locational access to medical and dental care and also to varying degrees of awareness of and concern for the importance of such services.

Table 1

RATES OF UNMET PHYSICIAN DEMAND AMONG POPULATION SUBGROUPS DIVIDED ACCORDING TO OCCURRENCE OF DISABILITY, PURCHASE OF DRUGS, AND VISIT TO PHYSICIANS

Population Classification Concerning Disability, Drug Purchase, and Physician Use	No. Persons in Population Subgroup	No. with Unmet Physician Demand	Percent with Unmet Physician Demand
No Disability, Drug Purchase or Physician Use	34,946	2,201	6.3
Disability Only	928	367	39.5
Drug Purchase Only	4,864	1,008	20.7
Physician Use Only	1,197	88	7.4
Disability + Drug Purchase Only	1,140	668	58.6
Disability + Physician Use Only	641	72	11.2
Drug Purchase + Physician Use Only	828	95	11.5
Disability and Drug Purchase + Physician Use	842	116	13.8
All Disabled	3,551	1,223	34.4
All Not Disabled	41,835	3,392	8.1
All Drug Purchasers	7,674	1,887	24.6
All Non-purchasers of Drugs	37,712	2,728	7.2
All Physician Users	3,508	371	10.6
All Non-users of Physicians	41,878	4,244	10.1
All Respondents	45,386	4,615	10.2

Table 2

REASONS GIVEN FOR UNMET DEMAND FOR PHYSICIAN AND DENTAL SERVICES

Reason	Physician Unmet Demand		Dental Unmet Demand	
	No. Cases	% of Total	No. Cases	% of Total
Lack of Adequate Finances	1,530	33.2	1,685	40.8
No Treatment Authorization Card	370	8.0	254	6.2
Treatment Place Inaccessible or No One to Go with	573	12.4	292	7.1
Went for Treatment but Unattended	279	6.0	111	2.7
Excessive Waiting Time Anticipated for Treatment	350	7.6	247	6.0
Patient Lack of Time	867	18.8	971	23.5
Patient Recovered Quickly (i.e., before he could seek treatment)	381	8.3	85	2.1
Other	265	5.7	484	11.7
Total	4,615	100.0	4,129	100.0

Table 3

DIFFERENTIAL RATES OF UNMET DEMAND FOR PHYSICIAN AND DENTAL SERVICES WITH SOCIO-DEMOGRAPHIC SUBGROUPS

Independent Variable	χ^2		Subgroup	No. Indiv.	Percent with Unmet Demand--	
	Physician	Dental			Physician	Dental
Residence Location	143	40	Santiago	13,028	7.6	9.4
			Other Urban	15,094	11.8	10.0
			Rural	17,264	10.7	8.0
Per Capita Income	38	48	Under 75E°	15,230	10.6	7.8
			75-149E°	13,563	11.1	9.6
			150+E°	16,593	9.0	9.9
Sex	87	32	Male	21,904	8.8	8.3
			Female	23,482	11.4	9.8
Age	911	1085	0-4	6,264	7.8	0.6
			5-14	12,351	5.6	6.3
			15-49	20,587	10.8	13.2
			50+	6,184	19.5	9.6
Insurance Benefit Status	113	48	Natl. Soc. Ins.	21,732	9.9	8.2
			Other	11,396	8.3	9.7
			None	12,258	12.4	10.3
Education	159	30	0-3	16,652	12.0	8.2
			4-9	22,014	9.9	9.8
			10+	6,720	6.5	9.3

Table 4

"F" RATIOS AND SIGNIFICANCE LEVELS* FROM MULTISORT ANALYSIS

Effect	Unmet Physician Demand		Unmet Dental Demand	
	"F" Ratio	Sig. Level	"F" Ratio	Sig. Level
Residence Location (R)	19.89	.001	4.77	.01
Per Capita Monthly Income (I)	2.94	-	0.50	-
Sex (S)	28.72	.001	10.81	.01
Age Group (A)	114.24	.001	165.35	.001
Insurance Benefit Status (B)	5.42	.01	2.64	-
Education (E)	4.15	.05	0.18	-
R - I	0.53	-	2.33	-
R - S	0.65	-	2.95	-
R - A	1.93	-	1.63	-
R - B	2.63	.05	2.84	.05
R - E	0.58	-	4.20	.01
I - S	1.38	-	0.63	-
I - A	1.37	-	0.96	-
I - B	2.07	-	1.12	-
I - E	0.47	-	0.98	-
S - A	12.95	.001	1.55	-
S - B	1.87	-	0.60	-
S - E	1.26	-	1.12	-
A - B	1.15	-	0.76	-
A - E	1.95	-	1.86	-
B - E	0.90	-	1.17	-

*Significance levels are approximate since the Multisort analysis is a simplified approximation to analysis of variance.

Table 5

ESTIMATED MAGNITUDE OF SIGNIFICANT MAIN EFFECTS, CONTROLLING FOR OTHER SOURCES OF VARIATION

a. UNMET PHYSICIAN DEMAND

Independent Variable	Subgroup	Percent with Unmet Physician Demand
Residence Location	Santiago	8.3
	Other Urban	11.9
	Rural	9.4
Insurance Benefit Status	Natl. Soc. Ins.	11.1
	Other	9.3
	None	8.8
Education	0-3	11.2
	4-9	9.9
	10+	6.9

b. UNMET DENTAL DEMAND

Independent Variable	Subgroup	Percent with Unmet Dental Demand
Residence Location	Santiago	9.9
	Other Urban	9.3
	Rural	8.2
Sex	Male	8.5
	Female	9.7
Age	0-4	0.3
	5-14	6.1
	15-49	13.0
	50+	9.3

Figure 1

ESTIMATED LEVELS OF UNMET PHYSICIAN DEMAND
BY AGE AND SEX
(Other Variables Held Fixed at Their Means)