

Determinants of Emergency Department Visits by Older Adults: A Systematic Review

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Abstract

Objectives: To conduct a systematic review of the literature on the determinants of hospital emergency department (ED) visits by elders, using a modification of the Andersen behavioral model of health services, adapted to explain ED utilization. **Methods:** Relevant articles were identified through MEDLINE and a search of reference lists and personal files. Studies of populations aged 65 or older in which ED visits were a study outcome were included if they were: original, not restricted to a particular medical condition, written in English or French, and investigated one or more determinants. Data were abstracted and checked by two authors using a standard protocol. **Results:** Fourteen studies (reported in 15 articles) were reviewed, 10 community-based and four using clinical samples. Among

ten studies that measured multiple determinants, determinants reported from multivariate analyses included measures of need (perceived and evaluated health status, prior utilization), predisposing factors (health beliefs and socio-demographic variables), and enabling factors (physician availability, regular source of care, family resources, geographical access to services). **Conclusions:** Need is usually the primary determinant of ED visits in older people. Controlling for need, predisposing and enabling factors that promote access to primary medical care are associated with reduced ED utilization. **Key words:** emergency medical services; aged; utilization; review literature; meta-analysis. *ACADEMIC EMERGENCY MEDICINE* 2003; 10:1362-1370.

The emergency department (ED) is a crucial interface between the hospital and community. There is an ongoing debate about the role that the ED should play in the health care system, not only in its traditional role as provider of emergency care, but as part of the primary care system, where it may function as a safety net for those without adequate access to primary care.¹ Older people constitute an increasingly important population served by the ED, a population characterized by multiple comorbid medical conditions, cognitive and functional impairment, and related social problems.^{2,3} A recent review of the

literature found that, compared with younger persons, older adults use emergency services at a higher rate, their visits have a greater level of urgency, they have longer stays in the ED, they are more likely to be admitted or to have repeat ED visits, and they experience higher rates of adverse health outcomes after discharge.⁴ Research has indicated many deficiencies in the care of this high-risk population, including failure to recognize problems that could benefit from more careful assessment (either in the ED or another setting), failure to refer to appropriate community services, and failure to communicate to the primary physician in a timely fashion the problems identified and interventions implemented at the ED visit.⁵⁻⁹ These problems may reflect uncertainty about the appropriate role of ED care in this population, whether as provider of urgent medical care and/or primary care for those without access to such services.

According to Andersen's behavioral model (the conceptual model most frequently used to explain variation in the use of health services), utilization of health services results from the combined effects of need, predisposing, and enabling factors.¹⁰ Prior research has evaluated the ability of this model to explain variations in the use of health services among older adults.^{8,11-13} Need, both perceived and professionally evaluated, appears to be the proximate and, in most contexts, the primary determinant of utilization of various services in older adults, including hospitalization, physician visits, and home

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health care.¹⁴ Predisposing factors include sociodemographic characteristics (age, sex, marital status, etc.), and health beliefs, which predispose the individual to use services for an illness. Enabling factors include those family and community resources that facilitate or impede access to services, such as income, health insurance, a regular source of care, availability of physicians, and rural vs. urban residence. Use of the behavioral model to explain health services utilization in a particular context allows an examination of the equity of access to health services and the identification of underserved populations. Access to services can be judged to be equitable if need is the primary determinant of utilization. Conversely, in populations in which predisposing and enabling factors explain a significant proportion of the variance of utilization, there is inequitable access to services.

Reviews of the performance of the behavioral model have not explicitly investigated its ability to explain ED utilization among older adults, nor have the determinants of ED utilization been differentiated from the determinants of the utilization of other types of services. When applied to ED utilization, the behavioral model requires some modification (Figure 1). In general, need for care and certain predisposing and enabling factors (e.g., age) might be expected to in-

crease the use of a variety of health services, including both primary care and emergency medical services. However, if ED utilization results at least in part from reduced access to primary care, enabling factors that increase utilization of primary medical care services should be associated with reduced ED utilization. For example, controlling for need, greater availability of physicians might be expected to increase the utilization of primary medical care, but also to reduce ED utilization.¹⁵ Also, certain health beliefs that are associated with reduced utilization of primary care services may predispose toward increased ED utilization.

To better understand the determinants of ED utilization in older people, including need, predisposing, and enabling factors, and to test our proposed modification of the Andersen model, we conducted a systematic review of the literature.

METHODS

Study Design. The study design was a systematic review of published studies in English or French on the determinants of ED utilization among older populations.

Study Protocol. The search strategy for relevant studies focused on published studies identified through computerized databases and handsearches of the bibliographies of relevant studies and review articles. The MEDLINE database was searched for the years 1965 to 2001 using a strategy to identify studies that were conducted in elders, and investigated one or more predictors of ED utilization. Search terms used included: elderly, health services utilization, emergency room utilization (or visit), emergency utilization (or service), emergency department utilization (or visit), emergency medical services, and health services for the aged.

The abstract of each article identified through the search was screened. Articles were excluded for the following reasons: they did not report data from an original study; they were restricted to a particular medical condition or procedure (e.g., a surgical case-series); the study population included patients younger than age of 65 (unless the results for those aged 65 and older were presented separately); no determinant was investigated; the study outcomes did not include a measure of ED utilization; or the article was written in a language other than English or French.

Measurements. Data were abstracted from eligible articles by one author (IK) and checked by the first author (JM). The following data were abstracted: study setting (community vs. clinical); study design (cross-sectional or longitudinal, use of a control group); sample size for the analysis; characteristics of the study population (population-based vs. clinical sample, unselected or high-risk); definition, reference time period,

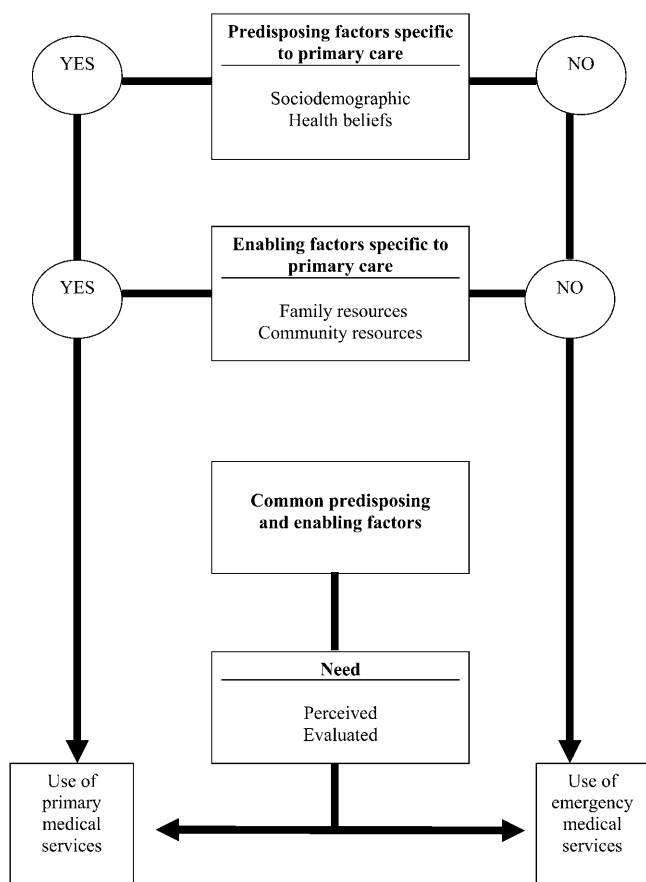


Figure 1. Modified Andersen model of emergency medical services.

and data source for ED utilization outcome variable; and data source(s) for determinants.

The determinants were classified as measures of need, predisposing factors, and enabling factors. Measures of need included evaluated need (medical problems, symptoms) and perceived need (self-reported health or functional status). We classified prior ED or hospital utilization as measures of need. Predisposing factors included social and demographic factors and health beliefs. Enabling factors included income, health insurance, regular source of primary care, and availability of primary care.

Data Analysis. The method of analysis was classified as univariate or multivariable. Variables that were statistically significant predictors ($p < 0.05$) of ED utilization (in either univariate or multivariable analyses) were noted.

RESULTS

Identification of Studies. A total of 15 relevant articles were found,^{16–30} of which two reported on the same study,^{19,29} for a total of 14 studies. Methodologic features of the studies are shown in Table 1. Of these, 10 used population-based samples,^{16–24,30} and four used samples from clinical settings.^{25–28} Most studies (9) were cross-sectional; five used a prospective design.

Measurement of ED Utilization. Measures of ED utilization were either dichotomous (e.g., any vs. no use) or the total number of ED visits. These tracked use during a reference time period that for the cross-sectional studies was between 6 and 18 months before the collection of data on predictors, and for the prospective studies was between 3 and an average of 15 months after data collection. Some of the studies used several measures of utilization: Ginsberg¹⁸ analyzed two different outcomes: any vs. no use as the primary outcome, and secondary analyses of the number of ED visits among users. The study reported by Lishner¹⁹ and Rosenblatt²⁹ conducted separate analyses of the number of visits per year and of any vs. no use per year; multivariate analyses were performed only for the second outcome. Two of the clinical studies focused on the determinants of repeat ED visits after an index visit.^{25,26} Because the pattern of repeat ED visits after an index visit is not uniform over time, one of these studies investigated both the determinants of early return to the ED (during the month after the index ED visit) and frequent overall ED utilization (three or more visits during the 6 months after the index ED visit).²⁶

Data sources for these measures of ED utilization included questionnaires (seven studies), medical record review (three studies), and administrative databases (four studies).

Measurement of Determinants. Four studies investigated only one or two determinants of ED utilization: restricted activity,²⁰ age and gender,²² retirement status,¹⁷ and appropriateness of medications.²⁸ Three of these studies conducted only univariate analyses; the study that conducted multivariate analyses reported only adjusted analyses for the primary determinant (retirement status) and did not explicitly report the effects of the covariates.²²

The other 10 studies investigated multiple determinants of ED utilization, six of them based explicitly on the Andersen model of health service utilization, categorizing determinants as measures of need, predisposing, or enabling factors.^{16,21,23,24,27,30}

Data sources for the measures of determinants were varied; most studies (eight) used questionnaires only, two used a combination of questionnaires and administrative databases, two used administrative databases, and two used professional assessments.

Results of Multivariate Analyses. Table 2 shows the statistically significant ($p < 0.05$) determinants of ED utilization identified in the 10 studies in which multiple determinants were investigated using multivariate methods. Measures of need were investigated in all of these studies; at least one measure of need in each study predicted ED utilization. Perceived poor health status was a statistically significant determinant of ED utilization in four studies.^{16,18,21,23} Evaluated health status was assessed in several ways, including self-reports of medically diagnosed problems, symptoms, or impaired functional status, and composite measures of comorbidity based on administrative data. Statistically significant measures of evaluated health status included: heart disorder,^{16,18} diabetes,²⁶ visual problems,^{16,26} nocturia,¹⁸ psychiatric problems,¹⁸ depression,²⁶ respiratory diagnosis,²⁶ greater comorbidity,^{21,23} diagnostic group,²⁹ impairment in activities of daily living (ADL),^{21,25} low physical activity,²³ and homebound status.¹⁸

Four studies reported that either previous hospital or ED utilization, or both of these measures, were statistically significant determinants of ED utilization: previous hospitalization in three studies,^{19,26,27} and previous ED utilization in two studies.^{26,30}

One study also assessed a composite measure of need: a six-item self-report screening tool, developed for the prediction of functional decline (Identification of Seniors At Risk [ISAR]), and found it to be a significant predictor of both early and frequent return visits to the ED.²⁶

Predisposing variables investigated in these studies included sociodemographic characteristics and health beliefs. Although older age was associated with increased ED utilization in most studies in univariate analyses, it was a significant multivariate predictor in only three studies.^{19,21,30} Gender was a significant multivariable predictor in only one study, with men

TABLE 1. Methodological Features of Studies of Determinants of Emergency Department (ED) Utilization, by Study Setting

Author (Year)	Country	Design	Study Population	Sample Size and Sampling Methods	Outcome Variable	Data Source for Outcome	Determinants Examined	Data Source for Determinants
Population-based studies								
Bazargan (1998) ¹⁶	USA	Cross-sectional	Urban, African Americans age 62+	998 Volunteers from random sample of senior centers	Number of ED visits in past 6 months	Questionnaire	Predisposing Enabling Need	Questionnaire
Gill (2001) ¹⁷	USA	Prospective	Health plan members (nondisabled)	754	Rate of ED visits during follow-up (median = 15 months)	Telephone follow-up questionnaire	Restricted activity	Home assessment
Ginsberg (1996) ¹⁸	Israel	Cross-sectional	Urban residents (including institutional population) age 69–71	759 Systematic sample	1 or more ED visits in past 12 months (secondary analysis of number of visits per user)	Questionnaire	Sociodemographic Utilization Health insurance coverage Access to health care Health practices Support network Social networks Medical ADL	Questionnaire
Hansell (1991) ³⁰	USA	Prospective	HMO members age 62+	667 Age-stratified random sample	Number of ED visits in subsequent year	Medical records	Body awareness Demographic Stressful life events Financial status Health limitations on activities Depressed mood	Questionnaire
Lishner (2000) ¹⁹ and Rosenblatt (2000) ²⁹	USA	Cross-sectional	Health insurance database, age 65+	354,782	1) Annual ED visit rate 2) 1 or more ED visits/year	Administrative database	Demographic Location Source of care Health care utilization Insurance Casemix	Administrative database
Murphy (1996) ²⁰	USA	Cross-sectional	Urban HMO members, age 66–69	759 Random sample	Number of ED visits during 18 months	Medical records	Age Gender	Administrative database
Shah (2001) ²¹	USA	Cross-sectional survey	Health insurance enrollees aged 66+ (Medicare Current Beneficiary Survey)	9,784	1 or more ED claims in 1993	Administrative database	Predisposing Enabling Need	Questionnaire Administrative data (Charlson Comorbidity Index)
Soghikian (1991) ²²	USA	Cross-sectional	HMO members aged 60–66	1,073	Number of ED visits/year	Medical records	Retirement status	Questionnaire Administrative data (hospitalization)

continued

TABLE 1. Methodological Features of Studies of Determinants of Emergency Department (ED) Utilization, by Study Setting (cont.)

Author (Year)	Country	Design	Study Population	Sample Size and Sampling Methods	Outcome Variable	Data Source for Outcome	Determinants Examined	Data Source for Determinants
Walter-Ginzburg (2001) ²³	Israel	Cross-sectional survey	Community-dwelling Jews, aged 75-94	1,487 Stratified random sample	1 or more ED visits in past year	Questionnaire	Predisposing Enabling Need	Questionnaire
Wolinsky (1983) ²⁴	USA	Cross-sectional survey	Community residents aged 65+	401 2-stage random sample	Number of ED visits in past year	Questionnaire	Predisposing Enabling Need	Questionnaire
Clinical studies McCusker (1997) ²⁵	Canada	Prospective cohort	ED users at one hospital, age 75+	113 Convenience sample	Return visit in 90 days	Administrative database	Sociodemographic Functional Clinical	Questionnaire
McCusker (2000) ²⁶	Canada	Prospective cohort	Released from ED of 4 hospitals age 65+	1,122 Representative sample	1) 30 day return to ED 2) 3+ visits in 6 months	Administrative database	Sociodemographic Functional Clinical	Questionnaire
Parboosingh (1987) ²⁷	Canada	Cross-sectional survey	ED users at one hospital, age 65+	75 Random sample	Number of ED visits in past 6 months	Questionnaire	Predisposing Enabling Need	Questionnaire
Schmader (1997) ²⁸	USA	Prospective cohort	High-risk patients from RCT at general medical clinic for veterans	208	Unscheduled ambulatory or ED visit during 12-month follow-up	Questionnaire	Medication appropriateness	Pharmacist assessment

ADL = activities of daily living; ED = emergency department; RCT = randomized controlled trial.

more likely to make repeat ED visits.²⁵ Other statistically significant sociodemographic determinants included: African American vs. other race²¹ and lower education.²¹ Conflicting results on living arrangement/marital status were found. Three studies found that individuals who lived alone,^{21,25} or were widowed,²⁴ were more likely to make ED visits. On the other hand, one study reported that individuals who lived with a spouse were more likely to utilize the ED.²³ Statistically significant measures of health beliefs included: health locus of control (those who believed that their health is determined by chance or a powerful other entity rather than by their personal actions were more likely to visit the ED),¹⁶ lack of faith in doctors,¹⁸ and positive attitudes toward health services use.²⁷ One study found that increased awareness of bodily symptoms and stressful life events were statistically significant determinants of ED utilization.³⁰

Among the enabling factors investigated, statistically significant measures of primary medical care included: perceived low availability of physicians,¹⁶ lack of a principal care or regular physician,^{19,24} and having more than one source of health care.²⁷ Conflicting results on family social resources were found. Perceived tangible support (including assistance with transport and finances)¹⁶ and ability to drive a car¹⁸ were associated with increased ED utilization in two studies. In a third study, perceived lack of support in case of need was associated with increased ED utilization.²⁶ Other enabling factors associated with increased ED utilization reported in single studies included: inadequate income and Medicaid insurance coverage¹⁸ and residence in urban vs. rural areas.¹⁹

The relative importance of need, predisposing, and enabling factors was addressed in some of these studies. Most studies reported a larger number of determinants related to need than to predisposing or enabling characteristics. However, one study conducted in an inner-city, African American population reported that more than 60% of the explained variance in ED utilization was related to predisposing and enabling factors.¹⁶

Four of the studies included in this review examined the determinants of the utilization of other types of health services, thus allowing a comparison of the determinants of utilization of the ED vs. other services. In Bazargan's study of inner-city African Americans, external locus of control was associated with the use of other ambulatory services.¹⁶ In Hansell's study of older HMO members, older age and stressful life events also predicted increased initial and follow-up clinic visits.³⁰ Increased body awareness predicted increased patient-initiated, but not physician-initiated, clinic visits. In Walter-Ginzburg's study of an Israeli population, all measures of need predicted physician utilization as well as ED visits, but living alone did

TABLE 2. Statistically Significant Determinants of Increased ED Utilization from Multivariate Analyses

Author (Year)	Need	Predisposing Factors	Enabling Factors
Population-based studies			
Bazargan (1998) ¹⁶	Perceived poor health status Heart conditions Eye problems	Locus of control (chance, powerful others)	Perceived low availability of physicians Perceived tangible support (e.g., transportation, financial)
Ginsberg (1996) ¹⁸	Heart disorder Nocturia Psychiatric problems Perceived poor health status Homebound	No faith in doctors	Inadequate income Driving a car
Hansell (1991) ³⁰	Previous ED utilization	Older age Body awareness Stressful life events	
Lishner (2000) ¹⁹ and Rosenblatt (2000) ²⁹	Casemix Hospitalization	Older age	Urban residence Medicaid insurance No principal care physician
Shah (2002) ²¹	Fair or poor self-reported health ADL impairment Comorbidities	Age ≥ 85 years Education <12 years African American Living alone	
Walter-Ginsberg (2001) ²³	Comorbidities Perceived poor health status Low physical activity	Living with spouse	
Wolinsky (1983) ²²	Nutritional risk	Widowed	Lack of regular physician
Clinical studies			
McCusker (1997) ²⁵	Number of functional problems	Male Living alone	
McCusker (2000) ²⁶	Diabetes ED visit in past month Hospitalized in past 6 months Depression Respiratory diagnosis		Lack of support in case of need
1) Determinants of 3+ visits/6 months	Heart disease Hospitalized in past 6 months Depression Alcohol less than daily Digestive system diagnosis Composite screening tool (ISAR)	Ever married	
2) Determinants of 30-day return visit	Number of hospital admissions	Positive attitude to health services	More than one source of care

ADL = activities of daily living; ED = emergency department; ISAR = Identification of Seniors at Risk.

not.²³ Wolinsky found that nutritional risk predicted total doctor visits and hospital episodes in addition to ED visits.²⁴ A regular source of care was positively associated with preventive medical contact and total doctor visits, but was inversely related to ED visits. Being widowed was not associated with use of services other than the ED.

DISCUSSION

This systematic review of the literature attempted to identify the determinants of ED utilization among older populations, using a modification of the Andersen model of health services utilization, adapted to ex-

plain variations in ED utilization. The review was based on 14 studies, of which 10 reported the results on multiple determinants.

Methodologic differences between the studies may have accounted for some of the differences in the results. The most important differences were in the specific determinants investigated. Some of the studies proposed explicitly to use the Andersen model and measured a variety of need, predisposing, and enabling factors. Other studies examined a more limited set of variables. For example, two of the ED-based studies of the determinants of repeat ED visits focused on identifying the individual patient characteristics, particularly measures of need and sociodemographic

predisposing factors; enabling factors were not assessed. Other methodologic characteristics, including study design (prospective vs. cross-sectional), study setting (community vs. clinical), measures of ED utilization (any use vs. number of visits per unit time), and data sources (questionnaire vs. medical records) may also account for differences in the results, but the small number of studies reviewed did not permit further exploration of these issues.

The substantive findings of this review support, in general, our adaptation of the behavioral model to explain ED utilization in older people. In this model (Figure 1), measures of need for care predict the use of a variety of health services, including ED services. Measures of need include perceived and evaluated health status. Perceived health status was perhaps the most consistent predictor of ED utilization in multivariate analyses, in four of six studies in which it was measured. Measures of evaluated health status also were consistent predictors of ED utilization; these included specific diagnoses (heart disease, diabetes, psychiatric) and composite measures of comorbidity or case-mix. Other measures of need found in several studies included functional status, both perceived and evaluated, measured in various ways, and previous hospitalization and/or ED visits. Miscellaneous measures of need reported from only one study included nutritional risk and alcohol consumption less than daily. The latter may be a proxy measure of chronic illness, because individuals with chronic illness may be advised to reduce their alcohol consumption. Most of these measures of need are inter-related, and some that predicted ED utilization in the univariate analyses were dropped from the final model. Nevertheless, among studies that assessed multiple measures of need, many of these measures remained in the final model. The use of composite measures of comorbidity reduces the number of disease-specific measures that are needed. Because of the importance of need in explaining ED utilization, it is essential to control for need (preferably using multiple measures of need and including perceived health status, functional limitations, comorbidity, and previous utilization) when examining other possible predictors of ED utilization. Lack of adequate control for health status is a limitation of several studies in this review, particularly those using only administrative data.

Predisposing factors included sociodemographic variables and health beliefs. Older age, an independent predictor of ED utilization in three studies, may be a proxy for unmeasured needs. Living arrangement or marital status was an independent predictor of ED utilization in four studies, although the direction of the association was not consistent. These inconsistent findings may reflect the variable pathways and temporal sequences by which marital status can affect the use of services. Presence of a spouse may provide instrumental support, for example,

assisting in transport to the ED; conversely, loss of a spouse may be associated with depression, which tends to increase service utilization. Another explanation is that, in some settings, older people who live alone are more likely to receive home care services that reduce the need for an ED visit.

African Americans and those with less education had increased rates of ED utilization in one study. These populations may lack information about alternative community services, or may have limited access to nonemergency services, because of lack of health insurance, or financial or other resources needed to obtain this care. Thus, low socioeconomic status may be a proxy indicator of lack of enabling factors to access primary medical care.

Health beliefs that predispose toward utilization of health services were addressed by several studies in this review. However, variability in the specific health beliefs assessed and in the method of measurement may have contributed toward differences in the results. Of interest was that several health beliefs that should predispose toward utilization of primary care services were associated with reduced ED utilization: faith in doctors and internal health locus of control. However, another study found that a positive attitude toward health services was associated with increased ED utilization.²⁷ One study reported that heightened awareness of bodily symptoms and stressful life events predicted increased ED utilization.³⁰ These factors also predisposed to non-ED visits in the same population.³⁰

The hypothesized relationships between factors that enable access to primary care and lower ED utilization were, in general, confirmed among those studies that adjusted for at least one measure of need. Enabling factors that were associated with increased ED utilization included measures of lack of family resources, suggesting that older people may benefit from social support to help them to appropriately access community services.^{16,23-26} Also, perceived low availability of physicians,¹⁶ lack of a principal care or regular physician or having a specialist rather than generalist as the principal care physician,^{19,24} and having more than one source of health care²⁷ were associated with increased ED use. This relationship has potentially important practical as well as theoretical implications, suggesting that ED utilization among elders in a community may be used as an indicator of access to primary care for this population.¹ This relationship and application should be validated in different settings.

The results of this review support our modification of the Andersen behavioral model of health service utilization for use in examining the determinants of ED utilization.^{10,14} Need remains an important, perhaps the primary, determinant of ED utilization in most of the studies reviewed. However, predisposing and enabling factors that predict increased utilization of primary care and other community services appear

to have the opposite relationship to ED utilization, because of the association between ED utilization and poor access to primary and community health services, described above.

LIMITATIONS

Potential limitations of this review include the following: incomplete identification of relevant studies, publication bias, exclusion of studies in languages other than English or French, missing information, and possibly incorrect interpretation of articles. Our search strategy included studies of health services utilization in which results related to ED utilization might not be reported in the study title or abstract, or captured in key words designed to capture ED utilization. We also searched in bibliographies of relevant articles. Several of the study authors (JM and SC) have published research on ED utilization in older populations and are familiar with much of the literature in this area. It therefore seems unlikely that relevant studies were overlooked in this review.

Another important limitation of these nonexperimental studies is confounding. Because perceived and/or evaluated health status appears to be a primary predictor of ED utilization, the associations of other predictors of utilization identified in these studies may be due to incomplete control of confounding by health status. For example, the associations of various measures of low socioeconomic status (SES) may be due, at least in part, to the association of poor health with low SES. Another example of a possibly spurious association is widowhood, often associated with depression, which leads to increased utilization.

This review found conflicting results with regard to the role of social factors as determinants of ED utilization. Future research should address the specific pathways through which these factors (e.g., marital status and social support) affect the use of services; prospective studies will be needed to determine the temporal sequences of these relationships.

Although these studies have identified multiple determinants of ED utilization, much work remains to be done. In general, studies of health service utilization among older adults find that much of the variance in utilization of services remains unexplained by multivariate analyses models based on the Andersen behavioral model.²⁴ Important areas for future research include identification of the health beliefs of older adults in relation to their decision to seek care in general, and to use the ED rather than another type of service.¹⁵ The ways in which health services for older adults can meet their needs more appropriately also should be investigated. The organization and delivery of services for older adults in hospitals and their EDs (e.g., availability of

geriatric liaison staff) may affect subsequent patterns of ED visits. The effects of alternative sources of care (e.g., drop-in clinics that are open evenings and weekends) upon ED utilization should be investigated.

CONCLUSIONS

This review, despite the relatively small number of studies and their methodologic heterogeneity, in general provides evidence in support of our modification of the behavioral model to explain ED utilization. The strength of this model is that it allows the equity of access to services to be examined in a particular context. If access to services is equitable, need should be the primary determinant of ED utilization; predisposing and enabling factors should account for a small proportion of the variance in ED visits.

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