

Loneliness as a Predictor of Hospital Emergency Department Use

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BACKGROUND. Recent studies indicate that loneliness is a significant risk factor for many ailments from colds to heart disease. If lonely patients are at greater risk for illness, then we might expect that they would use the emergency department (ED) more often and incur greater medical costs than those who are not lonely. Our goal was to determine the prevalence of loneliness in patients in an ED and to evaluate it as a predictor of ED use, hospital admission, and chronic illness.

METHODS. We evaluated a convenience sample of 164 ED patients with the University of California–Los Angeles Loneliness Scale, Version 3 and a survey of patient characteristics. Using medical record review and patient self-report, we determined total ED visits, the presence of chronic illness, and discharge diagnoses during a 1-year retrospective period. We evaluated data with least mean square regression and a 2-tailed *t* test.

RESULTS. We found a statistically significant correlation between loneliness score and total hospital ED visits ($P < .001$). The mean loneliness score (39) was equal to that of normal populations. Patients scoring higher than the mean used the ED 60% more per year than patients who scored lower ($P = .008$). There was no association between a patient's loneliness score and baseline chronic illness or severity of current illness ($P = .56$). Spanish-speaking patients had higher loneliness scores than English-speaking patients ($P = .001$).

CONCLUSION. Loneliness is a predictor of hospital ED use independent of chronic illness and is potentially very expensive to society. We recommend further studies be done to examine if allocating resources for preventing, diagnosing, and treating loneliness would be cost effective.

KEY WORDS. Loneliness; emergency service, hospital; chronic disease. (*J Fam Pract* 1999; 48:801-804)

Many recent studies indicate that people who are lonely are at a significant health risk. Lonely people are 4 times¹ more likely to suffer a heart attack and 4 times² more likely to die from such an event than those who are not lonely. They have been shown to be twice as likely to suffer from colds.³ Even the old wives' tale that a partner's life expectancy diminishes with the death of a spouse has been proved true.⁴ A person's perceived interaction with others within a community may be a better predictor of health than smoking, cholesterol, or even genetics.

We studied 164 patients who received treatment at the Lawrence General Hospital emergency department (ED). Our goals were to determine the prevalence of loneliness in an ED population and to evaluate it as a predictor of ED use, hospital admission, and chronic illness.

METHODS

STUDY POPULATION AND DATA COLLECTION

The Greater Lawrence Family Health Center research team administered the University of California–Los

Angeles (UCLA) Loneliness Questionnaire (Figure 1) to 182 patients seen at the Lawrence General Hospital ED. A second brief questionnaire was administered to address potentially confounding factors (ie, primary medical provider, preferred language, age, sex, and self-reported ED visits). We used a convenience sample of consecutive adult patients seen by 3 physicians during varying weekday shifts in the ED over a 1-month period beginning March 8, 1998. Readers were provided to assist the illiterate segment of the population in responding to the questionnaire. Material was available in English and Spanish. A total of 180 questionnaires were collected. This represents approximately 11% of the 1624 patients seen during that time.

Comprehensive data were collected from hospital records to verify each patient's number of ED visits, admissions following an ED visit, and direct admissions during a 1-year period. We performed a blinded review of medical records to establish discharge diagnoses and the number of chronic illnesses per patient. Because loneliness scale results were tabulated at the end of the 1-month data collection period, the research team was unaware of those scores at the time of admission or discharge diagnosis.

DEFINITIONS

Loneliness. The loneliness associated with health risk is related to a person's perception of his or her personal support system.⁵ Women tend to overreport loneliness, while men traditionally underreport it.⁶ Self-report is usually a

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FIGURE 1

UCLA Loneliness Scale, Version 3.

Instructions: The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by writing a number in the space provided. Here is an example:

How often do you feel happy?

If you never felt happy, you would respond "never"; if you always feel happy, you would respond "always."

NEVER	RARELY	SOMETIMES	ALWAYS
1	2	3	4

- *1. How often do you feel that you are "in tune" with the people around you?
2. How often do you feel that you lack companionship?
3. How often do you feel that there is no one you can turn to?
4. How often do you feel alone?
- *5. How often do you feel part of a group of friends?
- *6. How often do you feel that you have a lot in common with the people around you?
7. How often do you feel that you are no longer close to anyone?
8. How often do you feel that your interests and ideas are not shared by those around you?
- *9. How often do you feel outgoing and friendly?
- *10. How often do you feel close to people?
11. How often do you feel left out?
12. How often do you feel that your relationships with others are not meaningful?
13. How often do you feel that no one really knows you well?
14. How often do you feel isolated from others?
- *15. How often do you feel you can find companionship when you want it?
- *16. How often do you feel that there are people who really understand you?
17. How often do you feel shy?
18. How often do you feel that people are around you but not with you?
19. How often do you feel that there are people you can talk to?
- *20. How often do you feel that there are people you can turn to?

Scoring: Items that are asterisked should be reversed (ie, 1 = 4; 2 = 3; 3 = 2; 4 = 1) and the scores for each item then summed together. Higher scores indicate greater degrees of loneliness.

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poor indicator of a person's actual loneliness,⁵ therefore we felt a previously tested standardized questionnaire was most desirable for interpreting data. The UCLA Loneliness Scale, Version 3 was chosen because of its brevity, sensitivity, and specificity, as well as its continuous numerical result.⁵ Scores range from 20 (little loneliness) to 80 (great loneliness). The mean loneliness score for a general population is 40.⁵ The questionnaire also has excellent test/retest reliability ($r = 0.73$) over a 1-year period, and is negatively associated with social isolation, so it can be used to study loneliness as an independent risk factor.⁵ A version was translated into Spanish and translated back into English. Both versions were tested on a bilingual blinded group of 20 nurses and nurses aides at the Greater Lawrence Family Health Center. There was almost an exact correlation between scores (mean = 39.5 vs 39.0).

For the purposes of analysis, we categorized patients with a loneliness score higher than the mean as "lonely." We called subjects with a loneliness score lower than or

equal to the mean "non-lonely."

Total Hospital Visits. We determined the total number of hospital visits by using a combination of patient self-report and medical record data analysis. We obtained self-report information from the questionnaire. The computerized medical records listed the number of ED visits, admissions after an ED visit, and direct admissions to the hospital without being processed through the ED. We determined total hospital visits by adding the number of ED visits and direct admissions. When patients indicated that they used more than one hospital, we used the higher number of self-reported visits or medical-record-determined visits as the total hospital visit score. If a patient indicated that they only use the Lawrence General Hospital, we used that medical record to determine total hospital vis-

its. We collected data in a blinded fashion, using medical record numbers only to indicate patient identity.

Reason for Visit. We performed a blind review of medical records to obtain the chief complaint and discharge diagnosis from the ED. We categorized the patients according to the organ system involved (eg, cardiac, obstetric, pulmonary, and so forth).

Chronic Illness. We reviewed the medical records for past medical history. We noted any illness that might contribute to increased ED use identified it by organ system.

STATISTICAL ANALYSIS

We examined loneliness score, total visits, and hospital admission with least mean square linear regressions to evaluate for a relationship among loneliness, total hospital visits, and hospital admissions. We compared these characteristics of lonely and nonlonely subjects using a 2-tailed *t* test for significance. We used chi-square analysis to com-

pare patient characteristics in the lonely and nonlonely groups ($P \leq .05$ was considered significant).

RESULTS

BASILINE CHARACTERISTICS OF PATIENTS

One hundred eighty-two patients were enrolled in our study; 164 participated. Eighteen were excluded because of language other than English or Spanish, dementia, delirium, psychosis, age younger than 14 years, or failure to answer at least 17 of the 20 UCLA survey questions. Twenty additional people refused enrollment.

Of the 164 patients studied, 42% were men. The mean loneliness score was 39.06 with a standard deviation of 12, which is the same as in a normal population. There was no statistical association between the sex of a patient or presence of a primary physician and being lonely ($P > .20$). Patients who were lonely did not have increased underlying chronic illness ($P = .56$) or major differences in their reasons for the visit. Twenty-five percent of the patients spoke Spanish. There was a statistical significance

between having a preference for the Spanish language and increased loneliness score ($P = .001$).

HOSPITAL USE

Figure 2 shows the statistically significant association between loneliness score and total hospital visits (β coefficient = 0.063; standard error = 0.01475; correlation coefficient = 0.32; $P < .001$; 95% confidence interval, 0.034 - 0.093). There were 74 patients with loneliness scores above the mean of 39 who used the hospital an average of 3.6 times a year. The remaining 90 patients with loneliness scores lower than or equal to the mean used the hospital an average of 2.2 times a year ($P = .009$). There was no significant association between loneliness score and number of hospital admissions ($P = .52$).

DISCUSSION

We found a significant association between a patient's loneliness score and total hospital visits. We do note, however, that there were 5 outlying data points representing subjects who used the ED more than 9 times in a year. These can have a large effect on the regression output. All of these patients fell into the category of "lonely" by our definition, which seems significant. To further explore the effect of these outliers on our results, we excluded them and performed another linear regression on our data (Figure 3). We found that though our β coefficient was lower (0.037), it was still statistically significant ($P = .003$).

Two surprising results emerge from our data. First, we had expected that there would be more chronic illness in those who were lonely, given the recent studies associating loneliness with increased illness. Second, we expected that our ED population would be lonelier than the population at large. Neither of these expectations proved true. Thus, it seems that although lonely people use the ED more often, they are not necessarily more ill. The second finding is more difficult to

FIGURE 2

Total visits versus loneliness score regression ($P < .001$)

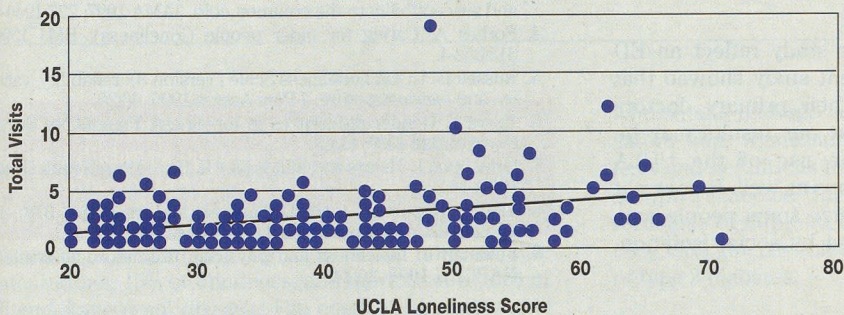
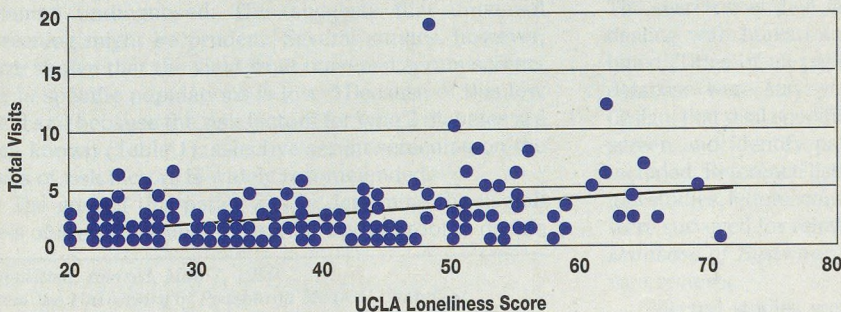


FIGURE 3

Total visits versus lonely score without outliers



explain. It is possible that our study sample contained a population of people who were less lonely but more ill. Elderly people score lower than younger people when they are given the loneliness questionnaire.⁵ The older population (aged >60 years) in our study had lower loneliness scores, though this was not statistically significant ($P = .12$). Elderly people also tend to be more ill.⁸ We might interpret our data to indicate that though an ED has an increased number of lonely patients, it also has an increased number of less lonely elderly patients. The net result is a prevalence of loneliness in the ED that equals that of a normal population.

When our study population was divided into lonely and nonlonely groups, there was a significant association between preference for Spanish language and loneliness ($P = .001$). This may be because the communication barrier makes a person perceive a lack of social support. Speaking Spanish, however, was not statistically associated with increased total visits to the ED ($P = 0.15$). This may in part be because of the relatively small number (40) of Spanish-speaking patients enrolled in our study. There may also have been some undetected change to the questionnaire when it was translated into Spanish.

LIMITATIONS

The patients represented in our study reflect an ED population. Nevertheless, a recent study showed that patients who are lonely visit their primary doctors more often,⁹ which suggests that our results may be more generally applicable. The use of the UCLA Loneliness Scale creates limitations as well. It does not measure social isolation, and since some people may assume that loneliness is defined by social isolation, there may be confusion.

CONCLUSIONS

Our study population of ED patients was not lonelier than the population at large. Lonely people did not have more chronic disease, hospital admissions, or different reasons for visiting the ED, yet they visited more often. Patients with a preference for Spanish may have been lonelier than English-speaking patients, but they did not use the ED more often. The average lonely patient used the ED 60% more than the average nonlonely patient. Loneliness, therefore, seems to be a meaningful independent predictor of ED use. Further studies to discover other associations with loneliness could be beneficial to our understanding of its social and medical implications.

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REFERENCES

1. Orth-Gomer K, Uden A, Edwards M. Social isolation and mortality in ischemic heart disease. *Acta Med Scand* 1988; 224:205-15.
2. Berkman L, Leo-Summers L, Horwitz R. Emotional support and survival after myocardial infarction. *Ann Intern Med* 1992; 117:1003-9.
3. Cohen S, Doyle W, Skoner D, Rubin B, Gwaltney J. Social ties and susceptibility to the common cold. *JAMA* 1997; 277:1940-4.
4. Forbes A. Caring for older people (loneliness). *BMJ* 1996; 313:352-4.
5. Russell D. UCLA Loneliness Scale (Version 3): reliability, validity, and factor structure. *J Pers Assess* 1996; 66:20.
6. Borys S. Gender differences in loneliness. *Personality Social Psychol Bull* 1985; 11:63.
7. Grinspoon L. Hearts and minds part II. *Harv Ment Health Letter* 1997; 14:2.
8. Tierney L. *Current: medical diagnosis and treatment*. 37th ed. Stamford, Conn: Appleton & Lange; 1998:1-30.
9. Feldman E. Loneliness and physician utilization, abstracted. *NAPCRG* 1998; 26:14.