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Informing older adults about non-hazardous, hazardous, and harmful alcohol use

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Abstract

Low levels of alcohol may be hazardous in the elderly, but available education focuses on younger, abusive, and dependent drinkers. A total of 209 older persons participated in various components of the development and evaluation of 'A Toast To Health In Later Life!' health promotion materials for the elderly. Patient focus groups, physicians, educators, and alcohol-use researchers contributed to all materials and measures. An education model for older adults guided the instructional format. Knowledge and self-efficacy scores increased significantly from pre- to post-test. Over 45% of persons in selected senior centers reviewed the materials without prompting by the study team. Older adults are willing to read extensively about the relationships among drinking, health, and medication use. Patient educators should include consumers in the design of health promotion materials and measures. Practitioners who rely on written educational materials for patient education and counseling should be provided with evidence of appropriateness, effectiveness, and feasibility.

Keywords: Patient education; Aging; Alcohol

1. Introduction

Alcohol use in older persons is a growing public health issue [1]. While only 2–4% of persons aged 65 and older meet criteria for alcohol abuse and dependence [2], up to 10% of older people have other serious problems related to alcohol such as hospitalizations, falls, sleep disturbances, confusion and drug–alcohol interactions [2,3]. As the elderly population increases, the number of older persons with alcohol-related problems will grow even if the prevalence remains constant. If the rate of alcohol abuse remains unchanged, for example, there will be 50% more elderly alcoholics in the US by the beginning of the 21st century than at the end of the 1970s [4,5]. An analysis of Medicare claims data for 1989 revealed that alcohol-related hospitalizations for older Americans are as prevalent as hospitalizations for myocardial infarction and have considerable associated cost [6].

There are several reasons why older persons are at high risk for alcohol-related problems. Aging modifies the body's responses to alcohol including the manner and rate of absorption, distribution, and excretion [7]. Compared to younger persons, older adults achieve a higher blood alcohol concentration for a given quantity of alcohol [8,9], placing them at risk for intoxication and other adverse events even at relatively low levels of use. Between two and three drinks per day are associated with increased risks of hypertension [10,11] and diabetes [12]. One to two drinks per day appear to increase the risk of hip fracture [13] and breast cancer [14,15].

Alcohol use can cause disease, worsen symptoms, and make illness harder to treat. In older persons, misuse of alcohol is associated with alcohol abuse and dependence, cirrhosis of the liver, peripheral neuropathy, depression, late-onset seizure disorder, confusion (masquerading as dementia), poor nutrition, incontinence, diabetes, peptic ulcer disease, congestive heart failure, hypertension, and fractures, and inadequate self-care [1,16]. The symptoms and consequences of alcohol use may be confused with disease or the aging process. For example, heavy drinking among older persons can mimic or contribute to major depression [17].

Light to moderate levels of alcohol consumption may interact with many medications commonly used in the elderly. These include cimeditine and ranitidine for peptic

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ulcer disease (increases blood alcohol levels); aspirin and non-steroidal anti-inflammatory drugs (increases bleeding time and may cause gastrointestinal inflammation and bleeding); benzodiazapines, narcotics, antihistamines, tricyclic antidepressants (causes sedation and psychomotor impairment); oral hypoglycemics (may cause disulfiram-like reactions); and aldomet, nitroglycerin, or hydralazine (may cause hypotension) [18].

Despite the prevalence and costs of alcohol-related risks and problems in the elderly, they often go unrecognized or untreated [19], suggesting the need for improved patient and physician education. Evidence is available that the elderly welcome information regarding alcohol use [20], and that patient education can significantly and positively affect physician behavior [21]. Unfortunately, much of the available education on alcohol use has been developed for abusive and dependent drinkers and contains little of relevance to many older adults. In fact, research has consistently shown that in some older adults, light consumption (e.g. one drink daily) actually has beneficial effects on cardiovascular functioning, stroke-prevention and all-cause mortality. Although the prevailing view is that alcohol consumption should not be a general recommendation, the potential benefits of alcohol are receiving attention from the clinical community [22]. Nevertheless, most educational materials regarding alcohol use do not address non-hazardous drinking nor the primary issue of concern to the elderly, namely, the relationship between alcohol consumption (regardless of dose) and physical and mental health, medication use, and functional status.

In this paper, we report on the development and evaluation of 'A Toast to Health in Later Life!', educational materials that are to be used in clinical health promotion programs. The materials aim to provide older adults with knowledge and confidence to prevent alcohol-related risks and problems.

2. Methods

2.1. Educational development

We assembled a team of experts in family and internal medicine, gerontology, alcohol use in the elderly, education, and graphic arts to produce a detailed booklet and a shorter pamphlet covering the topic of alcohol use in older adults. An initial draft of the content of the booklet and pamphlet was prepared using the results of a published literature review [23] and the criteria for harmful, hazardous, and non-hazardous alcohol use agreed upon by an expert panel [24]. The expert panel met for one and one-half days and used formal consensus development methods to set criteria for classifying alcohol-related risks and problems in elderly persons. The framework for the criteria was the World Health Organization's definition of harmful (presence of alcohol-related problems), hazardous (risks of alcohol-related problems), and non-hazardous (no known risks) alcohol use [25]. Non-hazardous use reflects epidemiological data that show that light-to-moderate drinking may have a beneficial effect on cardiovascular functioning, stroke-prevention and all-cause mortality [26–30].

2.1.1. The ARCS model of instruction

The materials were designed to incorporate the attention, readiness, confidence, satisfaction (ARCS) [31] model of instruction. To engage the patient's attention (the first component of the ARCS model), the materials were printed in color and contained special graphics and charts to summarize key instructional points. We provided a survey of alcohol-related risks and problems [32] to encourage individuals to realistically determine their needs for information and promote readiness to change, the ARCS model's second component. The survey provides a mechanism for individuals to classify their drinking as harmful, hazardous, or non-hazardous. To foster confidence in ability to understand alcohol-related problems and prevent or resolve them, the third element of the ARCS, the booklet was designed to include practice exercises (with feedback) and resources for change. The pamphlet is shorter and includes a quiz and feedback. The booklet and pamphlet were reviewed by focus groups of older persons to help ensure that they provided pertinent information in a useable format so that readers might satisfactorily understand and resolve alcohol-use problems.

2.1.2. Focus groups of elders

Sixteen people participated in two, 2 h focus groups using standard methods [33]. The first group consisted of seven persons, five of whom were female (one African–American, one Latina, and three non-Hispanic whites) and two of whom were male (both non-Hispanic whites). The second group consisted of nine persons, seven of whom were female (one African–American, one Asian and five non-Hispanic whites) and two of whom were male (one African–American and one non-Hispanic white). The first focus group was held at a regular health screening site, and the second was held at a meal site. Using focus group principles [33], participants were asked open-ended questions such as: did the booklet (pamphlet) get your attention? What did you learn that you already did not know? Are the materials easy to read? What do you think of the title? Would you recommend either or neither to a friend or to your doctor? Did you take the survey? How important to you are the results of the survey? Would you consider changing your drinking habits if the survey revealed you had risks for alcohol-related problems? Would you add pictures to the materials? What kinds? How do these materials compare to others? If we made the improvements you suggest, how would the materials compare? In addition to extensive discussion of the materials, focus group participants were anonymously surveyed about their reactions to the materials and asked for suggestions for improvement.

Of the 16 persons in both focus groups, five thought the materials were as good as others they had seen, seven thought they were better, and four, not as good. Of the 16, five said that if we made suggested changes, the materials would be as good, 11 said better, and none thought they would not be as good as others. Based on the focus groups' outcomes, we enlarged the size of the type, muted the colors in the booklet and the pamphlet, and added additional suggestions for cutting down on alcohol use. The booklet that resulted and was subsequently tested in the field is 36 pages, requires an 8th grade reading level, and takes approximately 17 min for completion, while the pamphlet requires about 7 min. An excerpt from the booklet is given in the Appendix A.

2.2. Effectiveness evaluation

2.2.1. The model

The purposes of the effectiveness evaluation were to find out if use of the materials resulted in improvement in knowledge and in self-efficacy with regard to alcohol-related risks and problems and if the content and format of the booklet and pamphlet were satisfactory. Knowledge, self-efficacy, and satisfaction are factors that have been associated with adherence and positive changes in health-related behaviors. Knowledge may improve adherence and behavior change by improving self-efficacy, which is defined as a person's belief about his or her ability to perform a specific behavior in particular situations [34]. Improved self-efficacy has been linked to positive changes in drinking habits [35]. Satisfaction or perceived usefulness in engaging in particular behaviors has also been linked to adherence to cancer screening regimens [36] and comprehensive geriatric assessment recommendations [37]. Although satisfaction has not been studied in connection with alcohol-use interventions, it is generally considered an important outcome in health and educational settings [38].

2.2.2. Recruitment

The Human Subjects Protection Committee (HSPC) at the University of California at Los Angeles (UCLA) approved the effectiveness evaluation protocol. We obtained permission from physicians practising at UCLA to contact patients living independently in the community who were 60 years of age and older. Our aim was to contact 100 patients during the study's 3-month data collection period. We used UCLA's computerized appointment system to identify patients of the appropriate age. We telephoned all potentially eligible patients using an HSPC-approved script to verify eligibility and willingness to come early or stay late at the time of the next clinic appointment. Participating patients were sent an informed consent form before the visit, and all were reimbursed US$ 20 for their time, which averaged about 40 min to read the materials and complete all pre- and post-measures.

2.2.3. The sample

We were able to contact an average of 10 potentially eligible patients each day. Of these, an average of seven agreed to participate. The most common reasons for refusing to participate were illness and not enough time. In total, 101 persons participated in the effectiveness evaluation. Participants' average age was 72 years, with a range from 60 to 89 years. About 57% were female. No differences were found in age or gender among those who agreed to participate in the evaluation and those who did not. Nearly 75% of the participants were white, 13% were black, 9% were Asian, and 4% were Hispanic. About 60% were married and had between 5 and 25 years of education: the average was 16 years. In total, 80% of participants were current drinkers, 12% had not had a drink in the past 12 months, and 8% were lifelong abstainers.

Each week, a coin toss determined whether participants read the booklet or pamphlet first. For instance, if a coin toss resulted in having Monday's participants read the booklet first and then the pamphlet, Tuesday's would read the pamphlet first and then the booklet, Wednesday's would read the booklet first and then the pamphlet, and so on.

2.2.4. Evaluation measures: knowledge, self-efficacy, and confidence

Participating patients' knowledge was measured by an information survey. To develop the survey, we created a pool of 20 questions linked to the content of the booklet and pamphlet. We pilot-tested the items for comprehension and appropriateness of content and then randomly assigned 10 questions to a pre-test and 10 questions to a post-test. We piloted the pre- and the post-test on a sample of nine older persons and analyzed the data to ensure that both tests were of equal difficulty. Sample questions are given in Table 1.

We measured self-efficacy with a six-item confidence survey. The survey asked respondents how confident (very confident, not very confident) they are in their ability to list the number of drinks of alcohol that may be harmful to an older person's health, list three medicines that can interact negatively with alcohol, and list four alcohol-related problems. The items on the confidence survey were selected after pilot testing them with the nine persons who participated in the information survey pilot test. To measure satisfaction, we prepared satisfaction surveys asking participants if they agreed, disagreed, or were undecided about whether the information in the booklet (or pamphlet) was easy to understand, if the print was readable, if the information was important, and if the information was practical. We also developed an appointment roster to keep track of participants' gender, age, marital status, ethnicity, education, and whether they were current drinkers (i.e. had at least one alcoholic beverage in the past 12 months), current abstainers (had at least 12 drinks in any 1 year of life but none in the past 12 months), or lifelong abstainers.

Table 1
Information survey: sample questions (circle one choice)

Are the following statements true or false?		
It is okay to have a couple of drinks if you are taking six medicines daily, as long as they are over-the-counter (non-prescription)	True	False
You can drive after having three drinks if you wait at least 1 h	True	False
One drink a day may be healthy for the heart if a person has no health problems and is not on any medicines that interact with alcohol	True	False
Sleep disorders can be caused or made worse by alcohol	True	False
If you are counting the number of drinks you have in a day, a glass of wine is one drink of alcohol, but you can have two beers and count them as one drink	True	False
Aspirin, Advil and Tylenol can all cause bleeding that can be made worse by alcohol	True	False
Harmful drinking includes drinking three drinks of alcohol at one sitting	True	False
Social drinking can be wise in amounts of three drinks per day for a healthy older person	True	False
Which statement is the best description of risky drinking?		
Drinking one to two drinks a day when the person is healthy and not taking medicines	1	
Drinking any amount of hard liquor	2	
Any drinking that may cause health problems even if it is less than one drink a day	3	
How would you describe a 65-year-old woman who drinks one to two drinks a day who is generally healthy and is taking medicine for her ulcer?		
She is probably drinking a wise amount, given her health condition	1	
She is probably drinking a risky amount, given her health condition	2	
She is probably drinking a harmful amount, given her health condition	3	

Participants completed the information and confidence and satisfaction surveys immediately before and immediately after reading their primary assignment of either the booklet or pamphlet. They completed a second satisfaction survey after they completed their secondary review. All information collection took place at the clinic.

2.2.5. Analysis of effectiveness evaluation data

To find out if participants improved in their knowledge of alcohol-related risks and problems, we used the Wilcoxon signed rank test to compare median and interquartile pre- and post-test scores (number correct minus number incorrect) on the information surveys. Because the scores on pre- and post-tests did not differ between the booklet and the pamphlet, and the content of the two is nearly identical, we combined scores on both formats to simplify presentation of the analysis results. We used Bowker's test for three by three tables to compare proportions of persons on the pre- and post-test who rated themselves very confident, confident, or not very confident on each item in the self-confidence survey. No differences were found between ratings for the booklet and the pamphlet, and we combined both in the analysis. We used McNemar's test to compare ratings of satisfaction between the booklet and pamphlet.

2.3. Feasibility evaluation

We conducted an observational evaluation [38] to study the feasibility of making the materials available in settings (such as medical clinics and senior centers) that frequently provide free printed educational information. The objective of the evaluation was to determine the number and characteristics of persons who were attracted to the materials and whether or not the materials were perceived to be important and useable. We placed the materials in the waiting rooms of the internal medicine clinic at UCLA and in the reception areas of two senior centers. Trained research associates arranged the materials so they would be as visible as possible (e.g. on a counter or ledge near the sign-in roster or on a centrally located table). However, the research associates themselves stayed as far away from the materials as they could and still adequately and unobtrusively observe the activities of passers-by. We alternated days so that on Monday, the booklet was displayed; on Tuesday, the pamphlet; Wednesday, the booklet; and so forth. We tossed a coin to choose which version of the materials to display first.

2.3.1. Unobtrusive observations

We collected observational data over a 5-day period. We spent about 6 h each day doing the observations. The research associates kept a tally of everyone over the age of 60 who visited the clinic or the senior centers during the observational period. We used UCLA's computerized appointment system to identify persons who were 60 years of age, and counted the number who signed into each center for the day. The research assistants also tallied the number of persons who showed evidence of interest in the materials, for example, they removed the materials from the display case. The tally sheet included items such as, ''looked at but did not pick up'', ''picked up and read''. We also collected data on gender and ethnicity and asked willing participants to tell us which component of the materials attracted interest: title, topic, comments on the cover, graphics, colors, and topic. We also asked participants about the importance of the topic of alcohol-related problems in older persons and if they know anyone 60 years of age and older who drinks.

3. Results

3.1. Effectiveness

Of 101 participants, 51 read the booklet first, and 50 read the pamphlet first. On average, the booklet took 17 and the pamphlet 7 min to complete. No differences were found in pre-test median knowledge scores between the booklet (4 points out of 10, interquartile range of 4) and pamphlet (4 points out of 10, interquartile range of 4). Median scores across the booklet and pamphlet together increased statistically from pre-test (median score = 6, with an interquartile range of 4) to post-test (median score = 10, with an interquartile range of 2), indicating an improvement in participants' knowledge ($P < 0.001$). No differences were found between the booklet and pamphlet with respect to any item on the confidence survey pre-test. Statistically significant improvements were, however, found from pre- to post-test across both educational formats with respect to every survey item (Table 2). For example, before using the materials, 12% of the participants reported that they were very confident that they could list of the number of drinks of alcohol that may be harmful to an older persons' health, 34% reported being confident, and 54% said they were not very confident. After using the materials, 50% said they were very confident they could list the number of drinks that may be harmful, 39% stated they were confident they could do so, and just 12% indicated that they were not very confident. About 20% of persons said they were very confident that they could list three medicines that interact with alcohol before they read the materials, but afterwards, 54% reported that they were very confident. The percentage of respondents who reported they were not very confident with regard to the six items on the confidence survey ranged from 22 to 58% on the pre-test; on the post-test, the range was 9–16%.

Respondents found the booklet easy to read and understand (91%), believed the information to be important (96%), and learned a great deal about alcohol use (80%). About 75% of respondents reported that they preferred to learn about health through written materials as compared to counseling or lectures, and 43% presently used computers. Although the majority of respondents were also satisfied with the pamphlet and agreed that the information presented was important and practical, statistically significantly (McNemar's test) more persons found the booklet easier to understand and read, and indicated that they and others could learn more from it (Table 3).

Table 3
Comparative satisfaction

Statement	Percentage agreeing with statements		
	Booklet	Pamphlet	McNemar's P
Easy to understand	91	74	0.015
Print size easy to read	98	80	<0.001
Information is important	96	97	1.0
Information is practical	95	94	1.0
Learned a great deal	80	53	<0.001
Other older persons can learn from these materials	90	57	<0.001

3.2. Feasibility

During the 5-day observation period in three sites (UCLA, Culver City Senior Center's nutrition center, and Felicia Mahood Senior Center in west Los Angeles), 114 of 249 (46%) persons were attracted to the materials. About 92 (81%) of these persons reviewed the materials without prompting by the research team. Another 22 people (19%) picked up the booklet or pamphlet, but returned the materials almost immediately. Of the 92 persons who reviewed the materials, 90 agreed to an interview. The 90 interviewees ranged in age from 60 to 74 years, with 51% of respondents 65 years of age and older, averaging 73 years. Nearly 64% were female. About 65% were white, 15% were Asian–Pacific, 10% were Hispanic, and 10% were African–American. In all, 60% of respondents stated that the topic of alcohol-related health problems among older persons was very important, and an additional 25% said it was important. About 57% reported that they knew someone over 60 who

Table 2
Self-efficacy survey

How confident are you that you can	Pre-test ($n = 101$)			Post-test ($n = 101$)[a]		
	Very confident, n (%)	Confident, n (%)	Not very confident, n (%)	Very confident, n (%)	Confident, n (%)	Not very confident, n (%)
List the number of drinks of alcohol that may be harmful to an older person's health?	12 (12)	34 (34)	55 (54)	50 (50)	39 (39)	12 (12)
List three medicines that may interact with alcohol?	20 (20)	22 (22)	59 (58)	55 (54)	30 (30)	16 (16)
List four alcohol-related health problems?	24 (24)	24 (24)	53 (53)	58 (58)	27 (27)	16 (16)
Define a drink?	36 (36)	42 (42)	22 (22)	60 (60)	31 (31)	9 (9)
Describe the difference between health-wise, risky and harmful drinking?	21 (21)	44 (44)	35 (35)	48 (48)	37 (37)	16 (16)
List two ways to change drinking habits to improve health?	20 (20)	53 (52)	28 (28)	47 (47)	37 (37)	17 (17)

[a] Bowker's $P < 0.001$ for all items across the three categories of confidence.

drinks occasionally. The title of the materials was the most prevalent reason for picking up the booklet (45%) and the pamphlet (32%) followed by the topic (booklet: 15%, pamphlet: 25%). Of the 90 persons who were interviewed, 46 answered questions about the booklet and 44 about the pamphlet. About 97% of persons reviewing the booklet and 82% of persons reviewing the pamphlet thought that educational materials like these were probably or definitely helpful in learning about health problems. Persons who commented positively on the booklet and the pamphlet emphasized the importance of the topic. Sample comments include: ''very important topic because I know lots of people who say they do not drink, but I know they do''; ''my uncle started drinking after his wife died and no one will talk about it''; ''I need to understand how drinking affects me because I am an older woman and I take more medicine than I ever thought I would''. The booklet received no substantively negative comments although two people suggested that it was quite long and required a great deal of reading. Four people suggested that the pamphlet did not contain enough information, and two said that it tried to include too much in a limited amount of space.

4. Conclusions

This study found that the topic of alcohol use in older adults is important to persons 60 years of age and older. Over 45% of persons who saw the materials in clinic settings or senior centers reviewed them without prompting by the study team even though many other competitive materials and activities were available. Older adults in the effectiveness evaluation sample preferred written educational materials to other methods of learning about alcohol use. When given a choice between a 36 pages comprehensive booklet or a pamphlet with less detail, they favored the booklet. Statistically significant improvements in knowledge and self-efficacy were, however, found with both the booklet and the pamphlet suggesting that both are effective. We, therefore, conclude that people are willing and able to learn about the risks and problems associated with alcohol use that are unique to older adults that 'A Toast to Health in Later Life!' in booklet and pamphlet form are effective and useable, but that a booklet is probably the better educational method if time for completion is not a concern.

The generalizability of this study's findings is circumscribed by the select nature of the sample. Participants in community research tend to be relatively healthy because severely ill and disabled persons are less like to volunteer for participation [39]. No data are available to describe the effectiveness of 'A Toast to Health in Later Life!' in less healthy individuals. Also, participants in the study were recruited during the study's 3-month data collection period and may not be representative of the community of elderly primary care patients. However, the participants did not differ statistically from participants in at other alcohol-use studies of older adults in their gender, ethnicity, or drinking patterns [40,41]. Finally, this study was relatively short-term and did not have the resources to recruit a control group, the design relied on self-controls. Although statistically significant differences were found from pre- to post-test, similar positive results favoring the experimental group over a control group would have strengthened the findings. The results of the study should be interpreted with caution because we do not know the extent to which acquisition of knowledge and enhanced self-efficacy actually alters alcohol-related behavior. We are currently conducting an evaluation of the impact of 'A Toast to Health in Later Life!' on the drinking behaviors of community-dwelling older adults. Preliminary results have been encouraging [40].

Despite its limitations, this is the only study available that concentrates on the development and systematic evaluation of educational materials on alcohol use in the elderly. The study's evaluation is unique in that it includes an observational as well as an effectiveness evaluation. Observational evaluations provide data on use in ''natural'' settings. The study took place in primary care locations and senior centers, settings that attract large proportions of older persons. 'A Toast to Health in Later Life!' has provided evidence of its effectiveness and usability in such settings.

5. Practice implications

'A Toast to Health in Later Life!' is a clinical health promotion activity that it aims to enable patients to take greater control of a non-medical aspect of their own health, namely, alcohol use. Hazardous and harmful alcohol-related behaviors are amenable to modifications in older people because they are not dependent drinkers who require extensive intervention. 'A Toast to Health in Later Life!' seeks to provide patients with the knowledge and self-efficacy skills they need to change their drinking behaviors when appropriate.

We attribute the potential effectiveness and usability of 'A Toast to Health in Later Life!' to its content and design which focus entirely on the elderly. In contrast to other educational materials, which are designed for younger persons and concentrate on dependency, 'A Toast to Health in Later Life!' emphasizes the relationship between alcohol (regardless of consumption level) and increased medication use, changing medical and psychosocial concerns, and possible alterations in functional status. Also, all topics covered by 'A Toast to Health in Later Life!' are based on sound evidence including an extensive review of the literature, the findings of an expert panel, and consultation with individual experts in alcohol research, medicine, geriatrics and gerontology, education, and graphic arts. Practitioners who rely on written educational materials for patient education and counseling should be provided with evidence that they are appropriate,

effective, and feasible. The implications of this study for practice are as follows:

1. Educational materials should be accompanied by evidence that they are likely to be appropriate for the targeted patients. In this study, focus groups of older adults selected the content of 'A Toast to Health in Later Life!', elders reviewed all drafts of the materials as well as the information and self-efficacy surveys. We also assembled a team of individuals who had expertise in alcohol research, geriatrics and gerontology, we also relied on a systematic review of the literature on alcohol use in general and alcohol in the elderly in particular. Finally, we adhered to the tenets of an instructional model that was targeted to older learners even though it was costly to do so. For instance, we employed a graphic artist to ensure fidelity to the attention dimension of the ARCS instructional model.
2. A formal evaluation and its findings should accompany claims of effectiveness. To justify the potential effectiveness of 'A Toast to Health in Later Life!', we measured participant's knowledge, self-efficacy, and satisfaction.
3. Evaluations of appropriateness and effectiveness should be attended by evidence that educational materials can be feasibly used in actual practice settings. We supplemented an evaluation of the materials' effectiveness in a health setting with observations of use in senior centers. The feasibility evaluation provided confirmatory evidence that patients preferred a relatively lengthy booklet to a shorter pamphlet.

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Appendix A

Consider these three people who drink the same amount of alcohol — two drinks a day, 3 days a week. All three are 74-year-old men who are about the same weight and height.

Mr. Jones does not have any chronic conditions like high blood pressure or diabetes. He enjoys jogging and watches his diet. He sometimes has back and joint pain. He does not take any medicines regularly, but when he has pain he occasionally takes Advil. He avoids drinking on days when he takes Advil, but otherwise drinks two glasses of beer, three evenings a week when he bowls. His drinking is health-wise.

Mr. Stevens leads a satisfying life and jogs like Mr. Jones. He has some chronic conditions but all are controlled with medication. If you count them, including the non-prescription drugs, Mr. Stevens takes a total of six different medicines on a regular basis. Adding the same two beers, 3 days a week that Mr. Jones drinks to this many medications is risky (hazardous) drinking. Mr. Stevens' chances of having an ''adverse drug event'' are increased by this amount of alcohol. ''Adverse drug event'' is a term for health problems resulting from interactions among two or more drugs. Typical problems include feeling dizzy or very sleepy. Such interactions are more likely when alcohol is added to the mix.

Mr. Smith has a peptic ulcer. Although he has a fair amount of stomach discomfort, he still carries out a normal routine. He is on daily medication for the ulcer, but he is not getting better. He drinks the same amount as Mr. Jones and Mr. Stevens. However, Mr. Smith's drinking is harmful, because this amount of alcohol is irritating his ulcer so much that it will not heal. Also, the medicine he is taking for the ulcer causes a higher blood alcohol level than would occur if Mr. Smith were not taking anything. This intensifies

the effect of the alcohol on his body. Since, Mr. Smith's drinking seems to be so limited, he does not think of mentioning it to his doctor, making it more difficult to figure out why his ulcer is not getting better.

The three people described above could seem very similar if we were not aware of their specific health considerations in combination with alcohol. Each of us has different factors to consider in deciding how much alcohol we can safely drink. In addition, circumstances can change and move us into a different drinking category. For example, if Mr. Jones develops an ulcer like Mr. Smith, his ''health-wise'' drinking may become ''harmful'' if he does not cut back. If Mr. Smith stops drinking and allows his ulcer to heal, he can probably go back to enjoying moderate drinking at a later time.

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