

# **AN EXPLORATORY STUDY OF NURSE BAG USE IN HOME VISITING NURSES**

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## **ABSTRACT**

Since 1893, when Lillian Wald founded the Henry Street Settlement with the first formal visiting nurse services in the United States, home visiting nurses have carried bags containing essentials for care in the field. A search for nurse bag utilization information revealed an absence of research regarding this ubiquitous feature of home nursing. A survey was sent to a random sample of 1000 home visiting nurses to explore current nurse bag utilization in the United States. A total of 502 surveys were completed and returned. This article discusses the survey results, including typical bag contents, manual transport information, discomfort resulting from daily use, fabric and cleaning preferences, and features most wanted in a bag. Implications for homecare nurses are also discussed.

## **INTRODUCTION**

Nurses who make home visits generally carry a bag so that assessment tools, paperwork, communication devices and medical supplies can be available during each visit. There are unique concerns related to carrying a bag, including:

- \* Organization for optimal workflow;
- \* Functionality and access to supplies;
- \* Ease in transport;
- \* Ease of cleaning;
- \* Physical discomfort associated with bag handling; and
- \* Cost and durability.

Specialty bags are available that address many of these concerns; however, effectiveness and extent of use is unclear. Even though an estimated 125,728 nurses make home visits in the U.S., (HCFA Center for Information Systems, Health Standards and Quality Bureau, 1999), and many carry a nurse bag, no studies specifically describe nurse bag utilization. The purpose of this exploratory study was to document nursing concerns and preferences associated with bag use. It

was hoped that these results could contribute to advances in comfort, effectiveness, and safety associated with this indispensable homecare tool.

## METHODOLOGY

A 21-question survey was developed by the co-investigators and approved by the University of Utah Health Sciences Institutional Review Board. Questions concerned general demographic information and bag utilization factors. A random sample of 1000 subjects was taken from a list of 4639 United States residents identified as homecare nurses. A metered return envelope was included with each mailing, as well as \$1.00 as a small token of appreciation for participation. The 1000 surveys were sent out in one bulk mailing and participants were given approximately three months to respond. An opening note to the participants explained that responses would be completely anonymous, any question could be omitted at the discretion of the participant and, by completing the survey, consent was given to become a part of the study.

Of the 1000 surveys sent out, 502 (50.2%) were returned. Responses to the survey were kept anonymous and each survey was given a tracking number for use during the analysis phase. Information was coded and entered into SPSS for windows (v.10) for statistical analysis.

## RESULTS

### Demographic Characteristics of the Sample

Registered Nurses and RN Managers made up 93.8%, and Licensed Practical Nurses 5.1% of the respondents. The National Association for Homecare (1999) reported that about 19.9% of homecare nurses are LPNs and about 80.1% are RNs, so the respondent group had 13.7% more RNs and 14.8% fewer LPNs than national estimates. Females made up 96.5%, and males 3.5% of the respondent group. The American Nurses Association (2001) reported that 94.6% of all Registered Nurses are female and 5.4% male, so there were 1.9% fewer males in this survey sample than the national average. Ages ranged from 23 to 69, with a mean age of 45.9 years. The ANA reported the average age of employed Registered Nurses as 43.3, thus survey respondents were slightly older than the national average.

Present level of fitness, as perceived by the respondent, showed that 85.9% (n= 431) reported an "average" or better state of physical fitness. Following is a listing of perceived fitness results:

#### Present Level of Fitness

* Poor	(2.0%)
* Fair	(11.8%)
* Average	(47.4%)
* Above average	(23.9%)
* Excellent	(10.2%)
* Exceptional	(1.6%)

Body mass indexes (BMI), (Murray, 2001), were calculated from height and weight information obtained from the survey. BMI is a basic measurement of overall risk for health problems associated with body weight. Following is a listing of BMI results:

### Body Mass Index Results

* Low or very low risk	(79.5%)
* Moderate risk	(11.0%)
* High risk	(5.0%)
* Very high risk	(4.5%)

It was notable that 85.9% of the respondents felt they were in an "average" or better state of physical fitness and 90.5% of those had a moderate or lower BMI risk estimate. If optimal body weight can be considered one of the possible signs of an average or better level of fitness, then results of these two questions appear to be roughly consistent.

Hours worked per week ranged from 1 hour to 80 hours, with the most common response being 40 hours per week. Of the full time workers, 23.6% worked over 40 hours per week. Years of employment in homecare ranged from 0.5 to 36 years (mean= 9.75).

When asked who provided the bag, 74.9% (n=376) of the respondents indicated their employer. Nurses provided their own bag 25.1 % (n=126) of the time. It was noted by 7.93% (n=40) of the respondents that two bags were used in tandem. If a second bag was used, the respondent provided it 79.5% of the time.

### Bag Contents

Respondents were asked to indicate items usually carried. Assessment tools and mask/gown/gloves were the most commonly carried items. See Table 1 for detailed results.

Table 1

#### Items Usually Carried in Bag

(N= number of responses indicating the item was usually carried  
%= percentage of respondents who usually carried the item.)

Item	N	%
Assessment tools i.e. stethoscope, BP cuff etc.	474	94.4
Mask/Gown/Gloves	417	83.1
Paperwork/Travel charts	234	46.6
Books/Manuals	212	42.2
Medical Supplies i.e. dressing change materials etc.	198	39.4
Cell phone	138	27.5
Pager	97	19.3
Lab and I.V. Equipment	94	18.7
Laptop computer	74	14.7

## **Bag Transport**

Transport information was obtained in an effort to characterize basic bag handling habits of homecare nurses. These results revealed that most nurses in this study carried a bag at least 75% of the time while performing client visits. The bags were most often unloaded from the front or back passenger seat. The bag was usually carried to and from clients' homes 10 or fewer times per day. Most nurses climbed five or fewer flights of stairs per day (83.5%). Most bags weighed 20 pounds or less (87.2%).

Despite the possibility of reporting multiple carrying options, nearly half of the respondents (47.4%) used only shoulder straps, 23.3 % used only handles, and another 20.3% used a combination of shoulder strap and handles. One of these three carrying options was used by 91.0% of all respondents. (Tables 2-5 provide further information).

Bag Transport Findings Tables 2-5 are formatted such that N= number of respondents who chose that option, and % = percent of respondents who chose that option out of a total of 502 respondents.

## **Discomfort Associated with Bag Use**

The United States Department of Labor, Occupational Safety and Health Administration has recognized that some occupational activities can cause ergonomic discomfort or injury. While carrying a nurse bag was not specifically discussed as part of these occupational activities, overall risks associated with the manual handling of items that are similar in bulk and weight to nurse bags were described (OSHA, 2000; Waters, 1994). Therefore, respondents were asked about discomfort experienced as a result of carrying a nurse bag. The results indicated that discomfort was not an issue for 39.7% of respondents, 41.6% reported minimal discomfort, 17.4% reported moderate discomfort, and 1.3% indicated severe discomfort.

## **Predictors of discomfort**

Logistic regression analysis was undertaken to determine which occupational factors best predicted reported discomfort. The two factors that best predicted discomfort were the weight of the bag (p-value less than .01) and number of flights of stairs climbed daily (p-value less than .001). Nurses carrying a bag weighing over 20 pounds were 3.6 times more likely to report discomfort than those carrying a bag weighing 20 pounds or less. Nurses who climbed more than 5 flights of stairs per day were 3.2 times more likely to report discomfort than nurses who climbed 5 flights of stairs or fewer per day. Other variables included in this regression analysis were; height, weight, age of the respondent, body mass index (BMI), number of hours worked per week, years employed in homecare, devices used to carry the bag, number of trips to and from client homes, and where the unloading of the bag took place. No other study variables were significantly associated with discomfort.

Table 2

<b>Bag unloaded from:</b>	<b>N</b>	<b>%</b>
Front or back passenger seat	316	62.9
Trunk	150	29.9
Floor	52	10.4
Subway or bus	4	0.8

\*Some respondents chose more than one response.

Table 3

<b>Number of flights of stairs climbed per day:</b>	<b>N</b>	<b>%</b>
0-5	419	83.5
6-10	60	12.0
11-15	6	1.2
16-20	5	1.0
20-25	1	0.2
Responses not given	11	2.2

Table 4

<b>Weight of bag</b>	<b>N</b>	<b>%</b>
1-5 #	62	12.4
6-10 #	187	37.3
11-15 #	137	27.3
16-20 #	51	10.2
21-30 #	43	8.6
Over 30 #	8	1.6
Responses not given	14	2.8

Table 5

<b>Carrying device(s) currently used:</b>	<b>N</b>	<b>%</b>
Shoulder strap	347	69.1
Handles	224	44.7
Backpack style	17	3.5
Wheels	12	2.4
Waist strap	7	1.4
Diagonal sling	5	1.0

\*Some respondents chose more than one response.

## Location of discomfort

Respondents were asked to indicate discomfort in specific anatomical areas that could be associated with carrying a nurse bag. For those respondents who indicated that they experienced minimal, moderate or severe discomfort, the location of discomfort was most often in the shoulders (79.0%) or neck (59.8%), or in both areas simultaneously (58.3%). No association was found between severity of discomfort and its location. In addition, no other study variables were significant predictors of severity or location of discomfort. Refer to Table 6 for detailed information about discomfort locations.

Table 6  
**Location of Discomfort**

<b>Location</b>	<b># of responses indicating discomfort in this location</b>	<b>% of respondents, with any level of discomfort, who chose this location</b>
Shoulders	171	79.0%
Neck	130	59.8%
Lower Back	60	28.0%
Upper Back	33	15.0%
Wrists	29	13.6%
Hands	28	13.1%
Fingers	27	12.6%
Elbows	25	11.7%
Mid-back	24	11.2%
Hips	16	7.5%
Thumbs	10	4.7%
Knees	8	3.7%

## Features Most Wanted in a Bag

At the end of the survey, there was an opportunity for respondents to write in any other features desired in a bag. There were 46 specific features mentioned. The most often mentioned was multiple/good variety of compartments. Table 7 lists the top 25 features. When asked what a reasonable cost would be for a "bag that meets most or all needs", the average was \$39. There was a broad range of responses, from \$10 to \$300. The range that contained most of the respondents (71.3%) was \$20 - \$75.

Table 7  
**Top 25 Features Most Wanted in a Bag**

<b>Feature Description</b>	<b>% of respondents wanting this feature</b>
Multiple/good variety of compartments	75.4
Adequate room for necessary items	33.3
Pockets/compartments organized for homecare needs	28.3
Compact, not bulky or unwieldy	24.1
Bag constructed of lightweight fabric	23.5
Easy access for loading and unloading supplies	12.9
Easy to clean	11.4
Durable	9.4
Pockets and compartments close with zippers	8.8
File compartments for paperwork and traveling charts	8.6
Padded and/or comfortable shoulder strap	7.7
Sharps container holder or compartment	6.8
Separate "clean" and "dirty" sections	6.8
Laptop compartment	4.4
Easy to carry/ has two kinds of comfortable straps to use	4.4
Wheels large enough to go over curbs, grass, gravel, & snow	3.8
Functional/meets daily needs	3.5
Internal/external straps or elastic to secure supplies	3.5
Weatherproof/Waterproof	3.3
Dark color on outside of bag	3.3
Cell phone pocket	3.3
Bag can "sit up" by itself for easier access	2.6
Labeled or see-through compartments for quicker access	2.2
Plastic lined outer pocket to hold hand-washing supplies	2.0
Light-colored interior so it is easier to "see" supplies inside the bag	1.8

## **DISCUSSION AND IMPLICATIONS FOR HOMECARE NURSES**

### **Study Limitations**

Factors existed that could have influenced the validity of survey results. The random sample may not have been taken from a representative group of homecare nurses, since the database that the random sample was taken from contained only 4,639 individuals and there are a reported 125,728 homecare nurses in the U.S. (HCFA Health Standards and Quality Bureau, 1999). Another factor could have been that the survey was completely anonymous, so some questions may have been inaccurately answered. Also, people experiencing discomfort may have been more inclined to reply than people without. Additionally, although every effort was made to

pose questions in an unbiased format, phrasing or choice of terms could have unduly influenced responses. Mindful of possible limitations, results obtained suggest some constructive implications regarding nurse bag utilization.

### **Discomfort Associated With Bag Use**

Discomfort associated with bag use was experienced by 60.3% of the respondents, with 18.7% having moderate or severe discomfort. Two factors that were shown to influence discomfort were weight of the bag and flights of stairs climbed daily. Flights of stairs may be a factor that cannot be altered, however, encouraging the use of elevators where possible may be of some help, and decreasing the weight of the bag could be helpful. Results showed that nurses who carried a bag weighing 20 pounds or less, had a significantly lower incidence of discomfort. It might be helpful for nurses to weigh their bags periodically and take measures to ensure that the bag weight does not exceed 20 pounds. If more than 20 pounds of supplies is necessary, then two bags, each with different carrying devices, may be helpful to distribute the load more evenly. Also, since a laptop computer can weigh between 10-20 pounds, it may be wise to put it in a bag on wheels or carry it in a separate bag. .

When carrying ANY load weighing 10 pounds or over, it is suggested that these guidelines be observed (OSHA, 2000):

- Minimize the distance between the load [bag] and the body.
- Lift loads [bags] from knuckle height [approximately mid-thigh level].
- Try to keep the travel distance for the lift less than 10 feet [from lift to destination].
- Minimize twisting when lifting or carrying.
- Provide good handles for grasping the load [bag].

Minimizing the distance between the bag and the body can be accomplished through using the legs rather than bending the torso while lifting. While carrying the bag from one location to the next, positioning it close to the body may be accomplished through the use of deliberate individual carrying technique and well-constructed carrying devices. Lifting the bag from knuckle height may be effectively accomplished if the bag is kept in the trunk or hatch area of the vehicle rather than the passenger seat or floor. Keeping the travel distance less than 10 feet would be difficult to accomplish for a homecare nurse; however advance planning, good organization, and careful selection of necessary supplies may be helpful in easing the load over distances exceeding 10 feet. Minimizing twisting while lifting or carrying can be accomplished through education and mindful awareness. The "good handles", listed above, could be accomplished through the utilization of bags with increased padding and sturdy construction of handles and shoulder straps.

Survey results did not clarify why the most common areas of discomfort were the shoulders, neck, and back. Discomfort could be the sum of client care activities, motor vehicle operation and overall upper extremity fatigue associated with transporting and handling bags and other supplies. Continuing education regarding the cumulative nature of upper extremity and back discomfort may be helpful in raising awareness so nurses can make individual adjustments in work habits where necessary.

## CONCLUSION

Nurse bags are an indispensable occupational tool for homecare nurses. Respondents of this survey indicated distinct preferences regarding what features would make nurse bag utilization more comfortable and efficient. Survey results also showed that nurses do experience physical discomfort related to nurse bag utilization. Bag weight and stairs were two factors that influenced discomfort. Simple interventions exist that may decrease or eliminate this concern. If given information and support, nurses may then have the option of improving their occupational comfort and efficiency. This exploratory study identified preferences and concerns associated with this common feature of home nursing. Further research is needed to more fully characterize issues surrounding nurse bag utilization.

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