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The random sample survey of non-fatal home accidental injuries, Cambridge, Mass. in 1952

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BOSTON UNIVERSITY
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Thesis

THE RANDOM SAMPLE SURVEY OF
NON-FATAL HOME ACCIDENTAL
INJURIES, CAMBRIDGE, MASS.
IN 1952

Submitted by

Marian Torkelson O'Rourke
(B.S., Simmons, 1951)

In Partial Fulfillment of Requirements for
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Professor of Education

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Assistant Professor of Education
INTRODUCTION

Accidents of all types have become one of the leading causes of death in this country. Home accidents cause approximately one third of all accidental deaths each year. Accidents Facts estimated that such accidents accounted for over four and a half million out of a possible nine and a half million non-fatal injuries in 1950. Therefore, accidents in the home constitute a sizeable portion of the problem.

In terms of mortality and disability, plus resulting manpower and financial loss to the nation, accidents have become a public health problem.

In 1952, there were 39 deaths from home accidents in Cambridge and there were over 2600 treated at the two largest Cambridge hospitals and over 230 persons were hospitalized. The Cambridge Health Department realized that the prevention of these accidents was a problem about which something must be done since communicable diseases no longer rank in the importance of damage done to human beings as accidents do in terms of death, defect and disability. Although the number of home accidents has probably remained about the same over the past thirty years, there has been a relative increase in their importance due to the fact that chiefly through the use of preventive measures the cases of diphtheria, whooping cough, tuberculosis, and scarlet fever have been considerably decreased so that home accidents have been able to rise up to
the importance that these communicable diseases once had.

The responsibility of the Health Department in the problem of accident prevention arises from the fact that any condition causing death, disease, or injury to large numbers of people, and which require community action for its solution is a public health problem. Statistics reveal that accidents have become the fourth leading cause of death, therefore accident prevention lies directly within the field of public health. Although traffic safety and industrial safety programs are being promoted in numerous communities, Cambridge, Mass., Washtenaw County, Mich., and San Jose, Calif. are among the few areas having developed home accident programs.

STATEMENT OF PROBLEM AND PURPOSE OF STUDY

The prevention of accidents is a new concept compared to the treatment of injuries. Although there has been great improvement in the surgical techniques and traction apparatus used for fractures due to injuries, very little has been done about repairing defective stairs and banisters, or of lighting hallways properly to prevent a person from fracturing a leg in the first place. To solve this problem of accidents, the Cambridge program has attempted two main lines of attack. First, to bring homes that are in poor condition up to a

standard where they are safe for occupancy. This means elimination of such hazards as uncovered wiring, poorly lighted hallways, loose steps etc. The second attack and chief one, is to educate people of all ages on the necessity of safety consciousness around the home in the same way that they have become conscious of looking in both directions before crossing the street. The educational aspects of the prevention program are the most difficult to plan but likewise are the most important.

A five year grant, totaling approximately $70,000 was made to the Cambridge Health Department by the W.K. Kellogg Foundation in 1951, for the purpose of developing a research-demonstration home accident program with the Commissioner of Public Health made responsible for the development of the entire program. An Executive Committee and a Technical Advisory Committee was formed to assist in developing the program. Objectives of the whole program were outlined as follows:

1. To determine in so far as possible the cause and controllable factors of home accidents in Cambridge.
2. To develop practical methods for prevention of home accidents and include evaluation studies of progress in prevention.
3. To evaluate the place of the local health department in a community program of home accident prevention.
Statistics are basic to an understanding of home accidents. Some of the specific uses for figures are in publicity work, education and in the promotion of prevention programs. They aid the health officer and taxpayer in deciding whether or not expenditures for home accident prevention are justified. Home accident statistics also serve as an indicator of the areas needing research and greatly aid in the understanding of the cause of accidents so that specific prevention measures may be devised.

In August, 1951, the Cambridge Health Department undertook this study to determine the exact number of accidents that might be expected in an average home, the kind of people that are hurt, their ages and sex, their occupation, and education. In addition, the kind of object that hurt them, such as knives, broken steps, glass, and the kind of surroundings at which the accident occurred, for example, poor homes, tenement houses, housing projects, small apartments and under such conditions as night time, snow storms, and in what part of the house such as the kitchen or bedroom. This would establish the overall basic for an educational trend and housing improvement program based on specific indications of corrections in education.

The survey was conducted from October, 1951 through July, 1952. As is shown in Table I, data was received from 924 families from a total of 1301 dwelling units visited and 1811 visits were made to obtain 924 successful records. Methods of research used were the interview technique and the case history technique.

The aims of this sample survey were:

1. To determine the causes of home accidents.
2. To determine the distribution of controllable causative factors.
3. To determine the distribution of home accidents.
TECHNIQUES AND PROCEDURES of the survey included:

1. Major emphasis was placed on the non-fatal accidents in the home which were serious enough to cause such injuries as fractures, contusions, burns, lacerations and damage due to poisons. Therefore "home accidents" to be investigated were classified as those unexpected injuries occurring to anyone in a home and outside on porches, steps, walks, driveways, and in the yard or garage. The cost of medical care, time lost from usual activity and cost of accident were made subordinate to physical injury.

2. Staff--the Health Department of Cambridge served as coordinator of the program. Five public health workers were employed by Kellogg funds to assist in the development of the program. These included a health educator and a clerk-statistician for a 5 year period, a nurse and sanitarian for a 3 year period and an additional nurse for a 2 year period. The program was developed as part of the overall community health program of the health department utilizing all personnel and resources of the department.

3. The code of definitions for the various categories to be studied was drawn up and discussed by the staff so all persons involved would have a common understanding of the information wanted. It was also agreed what would and would not be counted as accidents:

(1) Accidents, which had not been seen by a
physician would only be counted if it occurred within
a month of the date of the investigation,
(2) injuries which received medical attention
and occurred within the year would count,
(3) if death occurred within the past ten years,
it would be counted.

Questionnaires and techniques used in the survey were
pretested in September, 1951 on 180 families before
being put into actual use in order to pick up flaws.

4. The population to be surveyed was chosen at random
from card listings of electric meters of the Cambridge
Gas and Electric Company. Every twenty-fifth card was
chosen, discarding every twenty-fifth which was not
a home, e.g.--a factory or church. The survey pop-
ulation and housing characteristics were considered
representative of Cambridge in this randomly selected
survey except that a bias was introduced because the
entire group selected could not be reached. Working
couples, apartment house dwellers and persons living
alone in boarding houses were not adequately re-
presented. This led to a tendency to include more
families with children than was truly representative
of Cambridge.
DISCUSSION OF DATA:

Cambridge, Mass. is the fourth largest city in Massachusetts and industrially is the third largest city. It has a population totaling 121,000 people and covers an area of 6.3 square miles with a population density of 19,200 persons per square mile. There are over 32,000 dwellings with an average of 3.7 persons per household. Seventy eight percent of the population are native born white, the foreign born being chiefly from Italy, Ireland, Canada, Poland and Greece. The population is relatively stable except for about seven percent who are college students. There is one municipal and one private hospital, each with over 200 beds, and also two small hospitals.

Incidence:—There were 51 home injuries within a month of the investigation. The survey statistics made it evident that home accidents are a great problem in Cambridge since 1 out of 5 persons becomes a victim of a home accident within a year; half of these were sufficiently injured to need treatment by a physician.

Age and Sex:—Table II gives a breakdown by age and sex of home accidents victims of the sample survey. It was found that accidents occurred more frequently among children and older women. Twice as many accidental

### Table II

**Home Injuries by Age and Sex**

<table>
<thead>
<tr>
<th>AGE</th>
<th>TOTAL</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO. %</td>
<td>NO. %</td>
<td>NO. %</td>
<td>NO. %</td>
<td>NO. %</td>
<td>NO. %</td>
</tr>
<tr>
<td>0-1</td>
<td>64 2.0</td>
<td>25 .6</td>
<td>39 1.2</td>
<td>32 24.2</td>
<td>17 ..</td>
<td>15 11.3</td>
</tr>
<tr>
<td>1-4</td>
<td>251 7.8</td>
<td>138 4.3</td>
<td>113 3.5</td>
<td>24 18.2</td>
<td>3 .2</td>
<td>21 15.9</td>
</tr>
<tr>
<td>5-14</td>
<td>457 14.2</td>
<td>228 7.1</td>
<td>229 7.1</td>
<td>28 21.2</td>
<td>5 3.8</td>
<td>23 17.4</td>
</tr>
<tr>
<td>15-24</td>
<td>409 12.7</td>
<td>188 5.8</td>
<td>221 6.9</td>
<td>13 9.8</td>
<td>1 .8</td>
<td>12 9.0</td>
</tr>
<tr>
<td>25-44</td>
<td>989 30.6</td>
<td>465 14.4</td>
<td>524 16.2</td>
<td>24 18.2</td>
<td>3 .2</td>
<td>21 15.9</td>
</tr>
<tr>
<td>45-64</td>
<td>679 21.0</td>
<td>281 8.7</td>
<td>398 12.3</td>
<td>32 24.2</td>
<td>17 ..</td>
<td>15 11.3</td>
</tr>
<tr>
<td>65-74</td>
<td>284 7.5</td>
<td>100 3.0</td>
<td>144 4.5</td>
<td>32 24.2</td>
<td>17 ..</td>
<td>15 11.3</td>
</tr>
<tr>
<td>75 up</td>
<td>108 3.3</td>
<td>35 1.1</td>
<td>73 2.2</td>
<td>5 3.8</td>
<td>5 3.8</td>
<td>5 3.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>26 .8</td>
<td>15 .5</td>
<td>11 .3</td>
<td>26 .8</td>
<td>15 .5</td>
<td>11 .3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3227 99.9</td>
<td>1475 45.7</td>
<td>1752 54.2</td>
<td>132 99.9</td>
<td>43 32.6</td>
<td>89 67.3</td>
</tr>
</tbody>
</table>

**SOURCE:** Cambridge Health Department
Cambridge, Mass.
Injuries occurred to females and especially to those in the older age groups. If adult rates are adjusted for time spent in the home this difference would be less since the Washtenaw County Michigan study\(^1\) showed that women over 15 years of age spent an average of 19 more hours a week in the home than men. Figure I shows the minor injury rates by age group and sex made by this study. It was found that accidents involving younger men could usually be attributed to the fact that they were involved in performing some household task such as washing dishes and cooking which are the duties performed by housewives between 24 and 64 years of age which showed statistically as having the majority of the accidents. Figure II gives the three leading causes of injury by age group.

**Occupation:**--Fifty percent of the accidents reported in the survey occurred among housewives although only twenty three percent of the total population were housewives. This is thought to be due to the fact that in an office there are less hazards than are found in a home. Since a housewife spends more hours in the home than a person who works in an office, she is exposed to hazards for a longer period of time.

Data represented in Figure I indicate from rates by sex and age groups that the weight of the problem of accidental home injuries is concentrated among those under 15 years of age and among females over 15 years. "Hours spent in the home", as a gross index of exposure, is associated with rates of injury.

Figure II

LEADING MANNERS OF NON-FATAL INJURY BY AGE GROUP

= Falls
= Burns
= Cuts

132 Home Accidents in Random Sample Survey Study 1951-1952

Source: Cambridge Health Department, Cambridge, Mass.
Chronic Disease:—Home accidents occurred to twice as many women who suffered from a chronic disease as to those who did not. Therefore, it seems that persons suffering from some chronic disease are more prone to have an accident.

Accident Repeaters:—It is considered statistically significant that 10 people had 20 of the 132 home accidents reported. Four were boys in the 1 to 5 years of age group, who were injured while playing. Three were girls under 9 years of age and 3 were women between 26 and 65 years of age. Three had a chronic disease; one had organic heart disease, one had arthritis and the third was pathologically obese. Physical disability as well as psychological factors seem to play a part in accident proneness.

Follow-up studies of accident repeaters are being conducted by the staff.

Manner of Injury:—Table III shows the types of injury found in the sample survey. Over fifty percent of the accidents were falls which are one of the major causes of non-fatal injuries.

Among infants, the main causes of injuries were falls from cribs, beds and high chairs. Three quarters of the time, an adult had been in attendance. However, two thirds of the accidents involving children between 2 and 14 years of age happened when no adult was present. Frequently it was just momentary lack of supervision, such as leaving...
the child alone while answering the telephone or doorbell. Proper supervision and the elimination of the more obvious hazards could decrease the accident rate of this age group.

Table III

<table>
<thead>
<tr>
<th>Manner of Injury Random Sample Survey</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls</td>
<td>67</td>
<td>51</td>
</tr>
<tr>
<td>Burns</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Cutting and Piercing Instruments</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>Collisions</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Totals</td>
<td>132</td>
<td>100%</td>
</tr>
</tbody>
</table>

Between 1 and 2 years of age, falls are also the chief cause of home injuries. Boys receive twice as many injuries as girls and they occur while climbing stairs and into beds and chairs.

Burns, running into objects and cuts were the chief causes of injury in 1 year olds. Swallowing of poisons was limited to the 1 to 5 age group except for 1 infant. Sources of the poisons were the bedroom and kitchen and they were usually found on shelves and bureaus. Proper storage could eliminate these home accidents.
Two year olds had the highest accident rate for any single group and in the adventuresome 3 year old group, the falls reported were of a more serious nature than for children of the other age groups. There were also numerable reports of children between 2 and 5 years of age swallowing coins and other small objects. Rough group play among 3 and 4 year olds resulted in collisions and lacerations.

In 4 year olds, several of the accidents reported were due to the child sticking his hand into a wringer, an electric mixer or touching a hot iron and usually occurred when the mother had left the equipment momentarily. Most of the accidents occurring to children happened during play and were due more often to lack of supervision than any environmental hazard.

The leading cause of accidents in adults, particularly housewives, were cutting objects such as knives and broken dishes and glass. Falls were second and often due to defective steps, wet and highly polished floors and using chairs in the place of step ladders while doing housework. More women were victims of burns, the leading cause of fatal injuries in this age group, due to cooking. One of the most common causes of this type injury was due to the time interval between turning on the gas in the oven and lighting it. The survey showed that fifteen percent of the
injuries occurring in all age groups were burns. Eighty percent were in women and most of these happened to housewives in the kitchen.

To people 65 years of age and over, falls were the chief cause of the majority of fatal and non-fatal accidents. Frequently, the cause of a fall was related to either a definite chronic disease, usually arthritis, or to a more vague disability such as "dizzy spells". Ten percent of the falls caused some type of fracture and most of the falls resulting in death occurred to the elderly and usually involved a fractured skull.

Environment: --Climate-- Cambridge averages a summer temperature of 70 F and the winters average about 30 F. Ice and snow, common from December through March, is a hazard which causes an increase of home accidents during this period of the year, particularly among people over 65 years of age. More time is spent in the home during the winter months, so accidents increase in all age groups, but particularly for children.

Time of Day: --Forty percent of the accidents occurred between twelve o'clock noon and six o'clock in the evening, thirty percent occurred between six o'clock in the morning and twelve o'clock noon. The peaks came between nine o'clock and eleven o'clock in the morning and between three o'clock and five o'clock in the afternoon. Cooking accidents and
accidents among children were most common at this time. About eighty percent of the children injured at this time were not under supervision. It would seem that the performance of household tasks hinders the housewife from giving her children the proper amount of supervision.

Men of 21 years of age are involved in more accidents in the late afternoon or evening as would be expected. About five percent of all accidents occurred between ten o'clock in the evening and six o'clock in the morning, and were usually falls while getting in or out of bed. Most of the injured were over sixty-five years of age. In contrast, children under two years of age were more frequently injured during the day by falling out of cribs, beds or off bathinettes.

Day of the Week:—There were too few accidents in the random sample survey to show any significant variation; but more accidents occurred during the middle of the week. However, in the Lynn, Mass. Accident Survey of 1949-50, thirty-four percent of the home accidents occurred on Saturday and Sunday. This timing probably reflects exposure of the group to home hazards.

Housing Characteristics:--In the sample survey, there were 119 homes in which 132 accidents occurred and there were 805 homes with no reported accidents. Home accidents occurred just as frequently in all residential areas of Cambridge. (See Figure III)

Fifty six percent of the falls involving stairs occurred to persons living on the first floor although only forty six percent of all the houses surveyed had no upstairs and therefore had no staircase. One out of three falls on stairs occurred outside the dwelling unit, hence it would seem that outside stairs are more hazardous than inside ones. It was also noted that more multi-family dwellings reported accidents than would be expected. This was especially true for government housing projects. Since the similarities between homes in the accident and non-accident group, other than the housing projects, appeared more striking than the differences, the Cambridge Health Department is continuing investigations in order to find other housing factors which might influence home injuries.

The sample survey statistics showed that the smaller and more crowded the dwelling unit, the more chance there is for an accident to occur. Of all the homes surveyed, twenty five percent reporting at least one accident had over 1.01 persons per room while only nine percent of the remaining 809 families had over one person per room. There
FIGURE 11
HOUSEHOLDS REPORTING HOME INJURIES AND DEATHS
RANDOM SAMPLE SURVEY 1951 - 52

LEGEND
Red Areas - Residential
White Areas - Non Residential
X - Deaths
(Home Accident)
- Households
- Reporting Home Injuries

NOTE
64% of the dwelling units are located East of Harvard Square
was an average of 3.9 persons per household in the accident group as compared to 3.4 in the non-accident group.

There was no reported difference in the exterior appearances of the accident and non-accident homes. The median rent for both groups was between $30.00 and $39.00 per month. The mean rent for the accident group was $45.00; for the non-accident group $45.00. The mean for all rented dwellings in Cambridge was $42.75.

In comparing the 30 census tracts in Cambridge, according to income, no difference in the number or the severity of home accidents was apparent. Likewise no significant difference was found when comparing census tracts with a large negro population with tracts similar in other respects than race.

Home accidents occurred more frequently in multiple dwellings. The highest rates were in the federal and state housing projects which comprise almost four out of every one hundred dwelling units in Cambridge. Fifty-five percent of the people living in these projects are under 21 years of age; whereas only thirty percent of the total Cambridge census is under 21. Another fact which helps explain


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the high rate is that most projects have asphalt surface courtyards which are often covered with broken glass. Children also play in the cement hallways and on the stairs which have improperly balustrated railings. The floors are also made of a hard asphalt surface.

About twenty percent of the accidents in the random sample survey were considered wholly or partially due to environmental defects in the home, or to its furnishings. As for example, defects included were highly polished floors, steep and defective stairs, defective stoves, and poor housekeeping. The most important environmental hazards outside the home appeared to be broken glass and boards containing protruding nails found in the yard.

**Family Characteristics:** Approximately seven percent of both the accident and the non-accident group had a total income of over $7500.00 per year and both had the same median according to the 1950 census of Cambridge. However, seventy seven percent of the non-accident families had a family income of less than $4500.00 while only seventy percent of the accident families had an income under $4500.00. Therefore income did not seem to be an important factor.

**Accident Location:** Approximately forty percent of the total

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accidents in the sample survey were located in the kitchen. Three out of four of these accidents happened to women. Causes for the greater percent of these injuries were falls which usually occurred on a wet or waxed linoleum. Stoves and irons were also the causes for many of the reported cases of burns. About thirty five percent of the minor and twenty percent of the major injuries reported in the Washtenaw County, Michigan Study also occurred in the kitchen.

The bedroom was the chief location of fatal accidents. It accounted for over twenty five percent of the 1000 deaths in Kansas in 1940. About thirteen percent of the sample survey accidents occurred in the bedroom and over twenty percent of the accidents occurred in the hallway, and on the outside steps and yard. It is noteworthy, that more males, mostly young boys, were hurt outside the home. Table IV gives the location of the accidents in the sample study. The majority of the yard accidents occurred in the spring and summer.


2/Kansas State Board of Health, Kansas Accidental Death Reports, 1932-1948.
### Table IV
Location of Home Accidents
Random Sample Survey

<table>
<thead>
<tr>
<th>Location</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>50</td>
<td>38</td>
</tr>
<tr>
<td>Yard</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Bedroom</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Living Room</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Inside Stairs</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Outside Stairs</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Hall</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Bathroom</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Cellar</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Porch</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Dining Room</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>132</strong></td>
<td><strong>99</strong></td>
</tr>
</tbody>
</table>

Source: Cambridge Health Department, Cambridge, Mass.
SUMMARY AND RECOMMENDATIONS

The purpose of this survey has been to set up a control program. It has been recommended that the chief need in the prevention of injuries was to educate the very young, housewives and the very old on the occupational hazards chiefly found around the home which are centered in the kitchen and the yards. The opening of cans, lighting of stoves and clearing up of scattered furniture, etc. are the exact types of behavior that must be corrected in order to cut down the number of home injuries we have today.

Accomplishments, to date, as a result of the sample survey and further program aimed at the prevention of home accidents and injuries are:

**Age:**--One of the most important factors discovered in the survey was that home accidents occur more frequently among the very young and the very old and consequently, the program development has been aimed at these groups of people in the following ranges:

I - Children

A. Dissemination of the facts about injuries to children under two years of age is made to mothers tending well-child conferences in the form of personal conversation with the public health nurse.

B. By making available for the pre-natal clinics
and well-child conferences safety educational literature, such as, Child Safety and the Metropolitan Life Insurance Company booklet.

C. Exhibits were used and posters were drawn specifically on the basis of the most common types of accidents occurring to children in order to draw attention to the type and seriousness of home injuries among children. The staff nurses assist in the planning and use of these materials in the clinics.

D. Speeches, television, radio and movies have been used to acquaint the public with the survey facts and methods of eliminating home hazards. These have been particularly aimed at mothers and those responsible for the care of very young children.

E. Inclusion in the Cambridge Housing Code of provisions to prevent the use of lead paint on the interior of homes.

F. Newspaper stories aimed at mothers outlining the major causes of injury and the manner in which children’s injuries occur.

G. A School Safety Check List for Home Hazards (sample on next page) was issued to 19,000 public and parochial school children to take home. A small percentage of answer blanks were returned. How-
ARE YOU SAFE AT HOME?

TO PARENTS AND GUARDIANS:

In Cambridge last year approximately 40 men, women and children died as a result of accidents in the home. Nearly 400 persons were temporarily disabled, and 5 were disabled for life.

To safeguard every member of your family, may I urge you to make an inspection of your home, accompanied by your sons and daughters.

On this page you will find a list of some Home Safety Questions. After you have answered them in the "Answer Column," cut that Column from the page and, if you so wish, have your child return it to his classroom teacher. Keep the "Question List."

John M. Tobin
Superintendent, Cambridge Public Schools

<table>
<thead>
<tr>
<th>QUESTION LIST</th>
<th>ANSWER COLUMN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FALLS</strong></td>
<td>Check Yes or No</td>
</tr>
<tr>
<td>1. Are all small rugs tacked down or &quot;skid-proofed&quot;, and stair coverings</td>
<td></td>
</tr>
<tr>
<td>safely fastened?</td>
<td>1 □ □ □</td>
</tr>
<tr>
<td>2. When trying to reach high shelves is a step ladder used instead of a</td>
<td></td>
</tr>
<tr>
<td>stool or chair?</td>
<td>2 □ □ □</td>
</tr>
<tr>
<td>3. Are step ladders in good repair and safe working order?</td>
<td></td>
</tr>
<tr>
<td>4. Are all members of the family trained to pick up and put away all toys,</td>
<td></td>
</tr>
<tr>
<td>tools and clothing after using them?</td>
<td>4 □ □ □</td>
</tr>
<tr>
<td>5. Do you always turn on a light before entering a dark room or going down</td>
<td></td>
</tr>
<tr>
<td>stairs?</td>
<td>5 □ □ □</td>
</tr>
<tr>
<td>6. Do you always keep outside stairs, walks and doorways free from ice in</td>
<td></td>
</tr>
<tr>
<td>the winter?</td>
<td>6 □ □ □</td>
</tr>
<tr>
<td><strong>FIRE AND BURNS</strong></td>
<td></td>
</tr>
<tr>
<td>7. Do any members of the family ever smoke in bed?</td>
<td></td>
</tr>
<tr>
<td>8. When using cleaning fluids at home, are non-flammable liquids used</td>
<td></td>
</tr>
<tr>
<td>rather than dangerous ones like benzene or gasoline?</td>
<td></td>
</tr>
<tr>
<td>9. Are matches kept in a container and away from heat and children?</td>
<td></td>
</tr>
<tr>
<td>10. Do you have safety guards over unused electrical outlets to protect</td>
<td></td>
</tr>
<tr>
<td>young children from putting objects into them?</td>
<td></td>
</tr>
<tr>
<td><strong>POISONS AND GASES</strong></td>
<td></td>
</tr>
<tr>
<td>11. Are all poisons (such as insect sprays and disinfectants) and medicines</td>
<td></td>
</tr>
<tr>
<td>(such as sleeping tablets) clearly labeled and kept hidden from children</td>
<td></td>
</tr>
<tr>
<td>12. Is a window always kept slightly open in rooms where gas heaters or coal</td>
<td></td>
</tr>
<tr>
<td>stoves are in use?</td>
<td></td>
</tr>
<tr>
<td><strong>OTHER CAUSES</strong></td>
<td></td>
</tr>
<tr>
<td>13. Have your children been taught never to tease animals?</td>
<td></td>
</tr>
<tr>
<td>14. Do you use safe can openers instead of icepicks or knives?</td>
<td></td>
</tr>
<tr>
<td>15. Are your children trained not to run with lollipops, pencils, and</td>
<td></td>
</tr>
<tr>
<td>whistles in their mouths?</td>
<td></td>
</tr>
</tbody>
</table>

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The Cambridge Health Department
ever, the Health Department was not interested in quantity of response at this time as much as it was in using checklists as a means of introducing some home safety material into the school. A continuance of this program is planned as part of the health and safety education program for schools.

H. Because of the age factor, nurseries and nursing homes are more frequently inspected.

II - Elderly

In preventing injuries, particularly deaths in old people, the attack has been aimed chiefly at the people responsible for the care of the very old persons since it has been found by experience that their habits have been set. It is rather a problem quite similar to that of young children, that of supervision and controlling the environment, such as, having a bathroom and bedroom on the same level rather than on different levels in order to prevent falls on stairs. These have been accomplished by the following means:

A. Lectures to nursing groups, chiefly public health nurses, on the dangers older persons are liable to encounter and their prevention.

B. Lectures to attendant nurses who are responsible for the care of chronically ill persons, a group
very much inclined to have accidents.

C. Dissemination of knowledge gained by the survey to enforce regulations regarding homes for the aged, convalescent homes and nursing homes. Health Department physicians and nurses who make these inspections are aware of the causes of accidents to aged people and use this information in education as well as a means of law enforcement.

D. Television, radio, newspaper and other mass media are used to emphasize the dangers of accidents to the aged.

III - Housewives

The other group besides the young and the old were women who work in the home.

A. Periodic morning television shows, aimed primarily for the housewife, emphasizing accidents while working in the home with general educational material centered around hazards of housework.

B. Newspaper articles have been written specifically about household work and accident prevention.

C. A Cambridge Housing Code was written which incorporates all of the structural correction and prevention of the use of defective equipment such as gas stoves, refrigerators, faulty wires and improper storage, which in the opinion of the Health
Department can be maintained by law and enforcement. Gas refrigerators must be inspected yearly and serviced by a competent mechanic. They must be equipped with a thermostatically controlled valve which automatically shuts off the supply of gas if the flame is extinguished.

D. Regulations on light in hallways. All public halls and stair treads of a dwelling occupied by four or more families must be lighted at all times with a minimum of three foot candles provided either by daylight or artificial illumination.

Geographical Location

In the survey, accidents seemed to occur in all sections of the city and the only noticeable concentration was in government housing projects. Therefore, activity has been generalized in all sections of the city but particular attention has been paid by means of personal contact with the housing authority officials concerned with the projects. Hazards in the home, although not a major factor, are very important and it is more important to begin having these defects corrected in the government project then by private owners primarily because in dealing with another governmental

2/Cop. Cit., p.9.
agency, more cooperation can be expected and therefore, more successful results can be obtained. Also, there is a close relation between the Health Department and the government housing authorities through the Home Hygiene Committee of Cambridge.

The Health Department is planning to expand its activities in the housing project so that group meetings and personal visual material pertaining to each housing project, where a large number of accidents occur, can be utilized to attack the problem from a neighborhood focus. Plans have been made to conduct meetings at a housing project where the nurse, health educator and others can discuss the problems, within the project, and the methods necessary to correct this high rate of accidents.

Mention has already been made of the nursing and convalescent homes which have high rates because older people have high rates. As Table IV has pointed out, by far the greatest number of accidents occur in the kitchen. This fact has been emphasized in all educational material. During home visits, the public health nurse has been pointing out the hazards in the kitchen, particularly those affecting children, if allowed to play there. The specific hazards, such as bottles of kerosene for the stove being left unprotected, are looked for routinely and the practice discouraged, especially if they are within
the reach of children. In a staff conference with city building and wiring inspectors, the nurses learned how in the course of a home visit, they might detect some hazardous building and wiring features and report them to the Building Department for follow-up.

The housing regulations include ordinances pertaining to the kitchen because of the findings in the survey. For example, the use of kitchen stoves as heating units is forbidden. Regulations require that the kitchen as well as the laundry electric lights be controlled by wall switches or pull chains containing insulated wires to prevent wet hands from coming in contact with electric current.1

An indirect approach to the problem has been made in the prevention of overcrowding of homes since it was found that in various small homes, many accidents occurred to children in the kitchen because they had no other place to play.

Time

The fact that accidents show a peak in the mid-morning and mid-afternoon has focused the educational aspects of the work at these hours. Chiefly, the public health nurses emphasize these times as the danger periods.

Accident Repeaters

The survey showed that accidents occur to the same individual more frequently than would be expected. The Health Department emphasizes this point by having the public health nurses visit the homes of accident victims treated at the Mt. Auburn and the Cambridge City Hospital, not primarily for the accident already occurred but because in addition to findings that the same person is more prone to another injury, it was also found that the same family is more likely to have an accident than another family. Therefore, when a family visit is made to an accident victim, it is a way of using this fact of repetition. There are also other advantages, for example, the nurse has an opportunity to talk about general educational measures since the family, having recently been involved in an accident, is usually very receptive to any advice about accident prevention and other health and safety measures.

Psychologic and psychiatric literature reveal many cases studies on the basis of which formulations and theories have been advanced regarding the deeper and largely unconscious factors of personality development which influence accident behavior and accident proneness. Conflict with authority, hostility, neurotic tendencies, accident proneness and psychopathic personality are a
few of these which show the range of deeper motivating forces and unconscious behavior patterns which date back to early home and family experiences. Although individuals, with deeper personality disturbances and proportionately greater accident susceptibility, will require extensive individual therapy for their rehabilitation; this does not invalidate an educational approach aimed toward a better understanding of psychological factors as they affect the normal and average persons in their everyday activities. It is believed that an accident-prevention program can be made more effective by including such information, and by emphasizing that conscious effort can be as rewarding in the overcoming of psychological hazards as it is in other areas of safety education.

**Chronic Diseases**

Since chronic diseases in the aged seem to affect the production of injuries, the Health Department is providing better facilities for the aged, particularly at the City Infirmary, as a step in accident prevention. At the present time, a complete study of facilities

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available and services available for the care of chronic diseases in Cambridge is being undertaken by the Medical Social Worker in anticipation of a broad program in this field.

Climate

The types of accidents occurring in the winter, such as fires due to defective heating equipment, and falls on icy steps, have been used in seasonal stories and provisions have been made in the Housing Code to prevent such winter accidents, as for example, regulations on heating equipment and requiring banisters on outside stairs.

Manner of Injury

Falls were by far the most important factor of injury and have been emphasized in proportion to their incidents. Supervision of young children while playing and the area in which they play has been a focus of attack to prevent not so much the falls of young children as the results of injury incurred on a dangerous place.

Future Plans

The Health Department's overall plan for the future of the accident-prevention program will be on two broad fronts. First, in approaching the problem of environmental hazards by means of a housing rehabilitation program in which the Sanitation Division will be primarily con-
concerned along with other city departments, such as the Planning Board, City Engineer, Public Works, Fire and Building Departments, in improving the existing conditions of the homes in Cambridge. This will be done mainly by stimulating neighborhoods to form committees for this purpose and secondly by enforcement of the Housing Code. However, the main emphasis, due to the findings of the survey, is that about eighty percent of all accidents are due not to hazards as such, but to personal factors. The chief emphasis will be on education. Due to the fact that Cambridge is a suburb of Boston, two plans of educational work will be used. One will be a broad over-all educational program on a metropolitan level through the Metropolitan Accident Prevention Program and will be the main source of obtaining mass media education such as, television, radio, and newspaper coverage. On a local level, education will be developed for neighborhood groups in the rehabilitation areas selected by the Cambridge Home Hygiene Committee where Health Department staff could be used. For example, the public health nurse in the Strawberry Hill section of Cambridge is now a key person in the accident prevention program of that area since she is also the school nurse and knows intimately most of the key people in the area. The sanitarian in the region is also a key person. By neighborhood
meetings and personal contact an educational program becomes possible. The bulk of the work will most likely fall upon the public health nurse since she is the chief educator of the family group and materials of a local nature should be made available to her so that she can use them for this purpose.

It might be possible to include accident prevention activity in every home visit some day, no matter what the reason for the call but at the present time, it is thought more can be accomplished by concentrating on accident prevention rather than by disbursing all sorts of information on all topics at each family visit.

On both the metropolitan and local level, one problem that still is to be solved is to interest physicians in including accident prevention as part of their daily contact with patients, particularly pediatricians, by various means such as, possible graduate courses, medical society meetings, articles in medical journals and committees on accident prevention of medical societies. This can be accomplished over a period of time. It is the opinion of the Health Department that education should also be emphasized in the hospital, not only in the accident wards, but in the out-patient department as well.

Continued co-operation with such physicians and those agencies interested in safety such as, the Visiting Nurses Association, Fire Department, Red Cross, Boy Scouts, and P.T.A.
should be continued. An evaluation of the results of the program is still too early since it has been in effect too short a time, particularly since its chief emphasis is on education. However, an encouraging straw in the wind which statistically as yet means little, is the fact that from 1946 to 1951 there was an average of 40 deaths per year from home accidents in Cambridge but in 1952 there were 32 and in 1953 only 15 deaths. If this continues and non-fatal injuries follow this same pattern, then there is little doubt that this pilot project will become a model for a routine public health program for local health departments.
BIBLIOGRAPHY


* Source of all statistical data not otherwise indicated was furnished by and used with the permission of the Cambridge Health Department, Cambridge, Mass.