

# Work-related injuries in a Gauteng food retail industry: A review from 2005 to 2007

## ABSTRACT

The food retail industry is regarded as having a low risk of work-related injuries despite the wide range of work activities and hazards involved. Most grocery store work is physically demanding. In South Africa, studies that investigated occupational injuries in the food retail industry are limited. This study investigated the demographics and patterns of work-related injuries in a food retail industry in Gauteng, over a 3 year cycle (2005-2007). A quantitative retrospective design using injury registers and employees' medical records identified a total of 586 injuries during a 3-year cycle. The highest proportion was in 2006 (40.2%), followed by 34.1% in 2007 and 25.6% in 2005. Most frequent injuries were soft tissue and musculoskeletal injuries, commonly among packers and general assistants. Common sources were slipping or falling followed by objects falling from a height.

**Key words:** work-related injuries, occupational injuries, food retail industry, South Africa

## INTRODUCTION

Employees are faced with different kinds of hazards in their workplaces which predispose them to various accidents and injuries of different forms and extents. The type and extent of such injuries range from minor to severe and even fatalities. An accident is defined as an undesired event that has the potential to cause injury or damage or even to disrupt the daily operations in a workplace whereas an injury is a harmful condition sustained by the worker's as a result of the accident.<sup>1</sup> Such injuries could also have detrimental effects on the organisation which could disrupt productivity and lead to irreversible serious physical or psychological harm to the individual worker. Grocery stores sell a variety of fresh and preserved foods, and they range in size from supermarkets, which employ hundreds of workers and sell numerous food and nonfood items, to convenience stores with few employees and limited selections.<sup>2</sup> The retail industry is perceived as having a low risk of work-related injuries despite the wide range of work activities associated with various hazards that employees are exposed to in this industry.<sup>3</sup> Most grocery store work is physically demanding in some way as workers handle thousands of items such as while stocking shelves, checking groceries, and preparing meat products.<sup>3</sup> Work-related injuries in the food retail industry seemed to be increasing according to the monthly statistical figures and increasing expenditure on injured worker compensation in the specific organisations where the study was conducted. However, in South Africa, studies that investigated occupational injuries in the food retail industry are limited and injury statistics for such workers from the Department of Labour or Compensation Commissioner were not identified.

A literature review revealed that cashiers are the most studied of all supermarket workers, while little is known about other types of employees.<sup>4</sup> This paper presents the results of a study to investigate the demographics and pattern (type and sources) of work-related injuries in a specific food retail industry in Gauteng, South Africa, for 2005, 2006 and 2007. Work-related injuries were defined as injuries occurring during the course of work, whether or not they resulted in lost time.

## METHODOLOGY

A quantitative retrospective review of injury registers and medical records of employees who sustained work-related injuries from 2005-2007 was conducted. Records of employees without injuries were not included and therefore the total number of employees was not determined. Data was collected from the national office located in Gauteng province in South Africa, where electronic injury registers and medical records of monthly and annual work-related injuries for this industry are collated and archived. Study sites comprised of all supermarket (n=11) and hypermarket (n=39) stores in this organisation and located in Gauteng province. Family markets and mini markets were excluded from this study because they were regarded as family stores with poor formal recording of work-related incidents of injuries. A supermarket refers to a large store that sells a variety of food and household items to customers while a hypermarket is a store which combines the features of a supermarket and a department store, including full lines of fresh groceries and apparel.

A checklist designed by the researchers and based on literature was used to collect data. It comprised sections

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that addressed the demographics of injured workers, the type, frequency and sources of these injuries and the impact of these injuries in terms of the lost time as a result of each injury in each calendar year (the latter is not discussed in this paper) and comparison of the pattern of these injuries over 3 years (i.e. 2005-2007).

The study was granted ethical clearance by the MEDUNSA Research and Ethics Committee prior to its execution. Permission to access electronic data was obtained from the provincial General Manager of the

selected food retail group. Even though records were reviewed, confidentiality of data collected was maintained. Data analysis was done by means of SPSS version 13.0. Results are presented in frequencies, percentages and other descriptive measures. Chi-square and Fischer Exact tests were used to investigate associations between demographics of injured employees and the nature of injuries sustained. The level of significance was set at ( $p < 0.005$ ).

## RESULTS

All records of work-related injuries for all employees working at the organisations' stores were used for analysis. In total 586 work-related injuries were recorded for 549 employees within a cycle of three years (i.e. from 2005-2007). Of these 150 (25.6%) injuries occurred in 2005, 236 (40.3%) in 2006 and 200 (34.1%) in 2007.

### Socio-demographics of injured employees

There was little variation in the age distribution of injured

**Table 1. Gender distribution of injured employees (N = 549)**

Year	Male		Female		Total	
	n	%	n	%	n	%
2005	64	42.7	86	57.3	150	100
2006	87	36.9	149	63.1	236	100
2007	54	33.1	109	66.9	163	99.9
Total	205	37.3	344	62.7	549	100

**Table 2. Percentage distribution of injuries according to race (N=549)**

Race	2005		2006		2007	
	Super	Hyper	Super	Hyper	Super	Hyper
Black	89.8%	79.3%	87.7%	65.8%	91.2%	80.4%
Coloured	1.1%	1.6%	3.1%	12.3%	3.4%	7.8%
Indian	2.3%	1.6%	1.8%	2.7	2.0%	–
White	6.8%	17.5%	7.4%	19.2	3.4%	11.8%
Total	100%	100%	100%	100%	100%	100%

**Table 3. Duration of employment in years**

	2005		2006		2007	
	Super	Hyper	Super	Hyper	Super	Hyper
Mean	9.26	10.7	9.1	11.7	7.02	8.69
Standard deviation	7.5	7.6	7.9 SD	9.4	7.60	7.4

**Table 4. Occupation of injured employees**

Type of occupation	2005 Store		2006 Store		2007 Store	
	Super (%)	Hyper (%)	Super (%)	Hyper (%)	Super (%)	Hyper (%)
Administrative	2.2	1.6	1.8	–	–	–
Assistants	34.0	19.0	24.5	–	43.0	21.6
Bakery related	9.0	3.2	3.1	–	0.7	2.0
Cashiers	9.0	6.3	12.3	–	13.4	5.9
Chefs	1.0	6.3	3.7	–	2.7	3.9
Clerks	2.2	3.2	3.7	–	0.7	9.8
Data capturer	1.1	1.6	0.6	–	–	–
Drivers	1.1	1.6	–	–	–	2.0
Managers	7.9	7.9	7.4	–	6.7	3.9
Packers	17.0	17.5	18.4	–	14.8	17.6
Sales persons	4.5	7.9	9.2	–	2.7	11.8
Security	2.2	1.6	–	–	–	3.9
Supervisor	4.5	6.3	3.7	–	4.0	5.9
Waitress	1.1	1.6	–	–	–	3.9
Miscellaneous	6.8	12.7	11.7	–	11.4	7.8

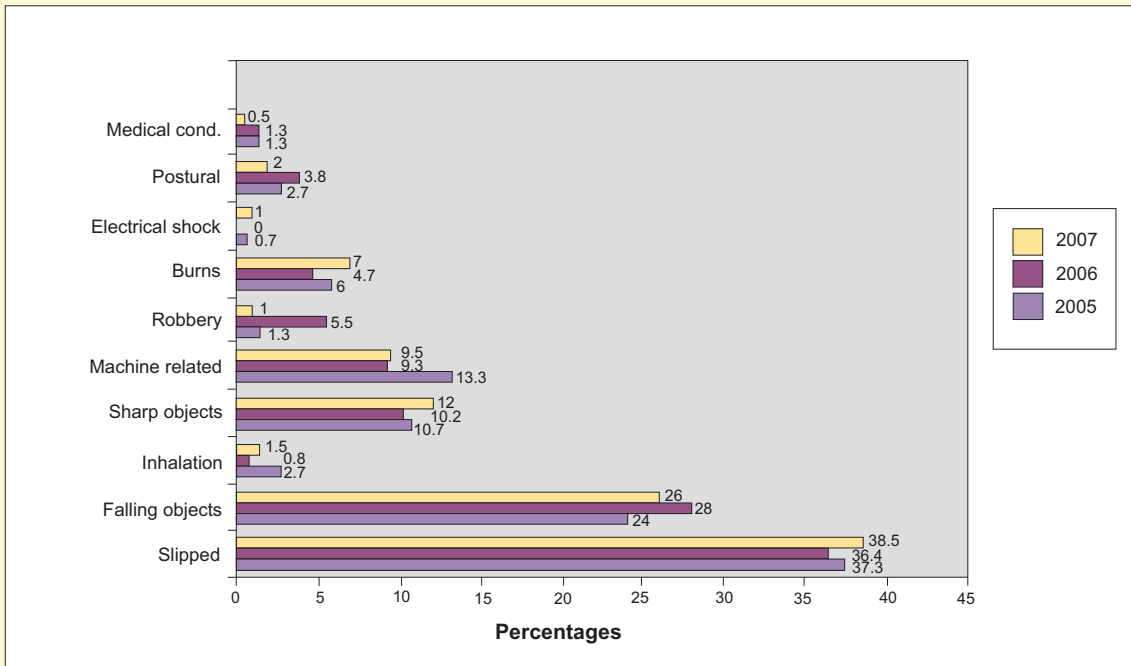


Figure 1. Sources of injury (N = 586)

employees over the three years. The mean age was 39 years, and the ages ranged from 20 to 60 years. In both super and hypermarkets more females (62.7%) than men (37.3%) were injured (Table 1), with a highest proportion in 2006. Most injuries were sustained by black employees in both types of stores every year (Table 2). It is likely that this reflects the demographics of the total workforce but these figures were not collected. The mean duration of employment is shown in Table 3.

#### Nature of job or occupation of injured employees

Injuries in relation to occupation are shown in Table 4. The highest percentage of injuries was among the assistants (43%) in 2007 followed by the packers (18.4%) in 2006 among the supermarket stores. It should be noted that occupation was not indicated in the records of 37 (6.3%) of the injured employees working in hypermarkets in 2006.

#### Sources of injury

The source of injury is defined as the object, substance, exposure, or bodily motion that directly produced or inflicted the disabling condition.<sup>2</sup> Based on the description of accidents, the main sources of injuries were slipping, with a highest proportion (38.5%) in 2007, compared to (37.3%) in 2005 and (36.4%) in 2006, and objects falling from height (Figure 1).

#### Types of injuries

Figure 2 shows the overall distribution of the types of work-related injuries over the cycle of 3 years. Most injuries 236 (40.2%) which occurred in 2006, included soft tissue

injuries (STIs) like cuts and/or lacerations, followed by musculoskeletal injuries (MSIs) 180 (31%) in 2005, and these were common among general assistants (43%) and store packers (18%). More MSIs were reported in 2005 than STIs in 2006. Also, STIs increased over three years and MSIs decreased in 2006 and 2007.

#### Associations between type of injuries and other variables

To satisfy the Chi square test for associations criterion of a minimum of 5 in each cell, categories of injuries were grouped according to the most common type of injuries. Regarding the percentage of injuries according to employees' age groups (Table 5) the highest proportions (38.7%) of work-related injuries were sustained by the group above

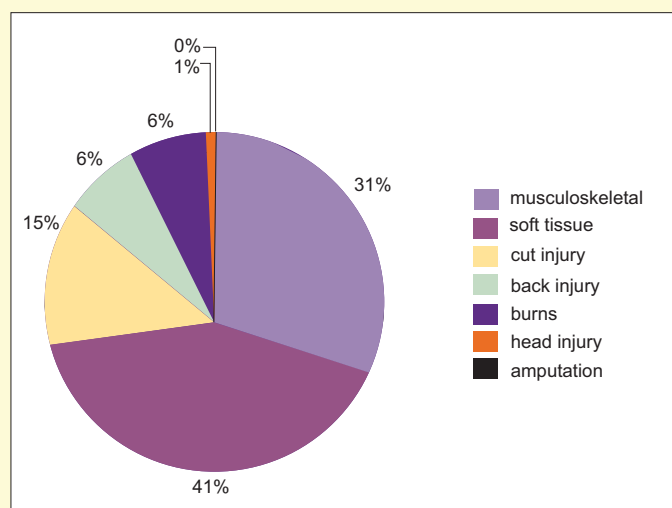


Figure 2. Distribution of type of work-related injuries over the 3-year cycle (N = 586)

50 years. However, this association ( $\chi^2 = 5.366$ ) was not significant ( $p = 0.788$ ).

In relation to gender (Table 6) a significantly higher percentage (65.5%) of female workers sustained injuries ( $\chi^2 = 56.193$ ,  $p = 0.000$ ).

Initially 15 different categories of occupations were identified for the descriptive part of the study, but for cross tabulations the occupation was collapsed into five categories (see Table 7). Three cells had expected count of less than 5, thus the Fisher Exact test was used to test for association between the actual frequencies instead of Chi square. There was a significant association between occupation and type of injury ( $p = 0.00$ ).

Supermarket stores had the highest percentages (66.7%) of injuries and most (30.9%) were STIs (Table 8). There was a significant association between type of store and injury (Fisher Exact test  $p = 0.000$ ).

## DISCUSSION OF RESULTS

The study found that 586 work-related injuries were reported from 2005-2007 for the grocery stores. Despite being unable to determine the injury rate, this is a substantial number of injuries. It contradicts perceptions that grocery store work is low risk work.<sup>3</sup> The work is physically demanding and tasks related to handling high numbers of

items each day to stock shelves, check groceries, decorate bakery items, and prepare meat products involve several ergonomic and physical risk factors. These risk factors increase the potential for injuries and illnesses,<sup>5</sup> probably explaining why such industries in the USA were ranked amongst the nine industries with over 100 000 injury cases in 2000.<sup>2</sup>

Most injuries occurred in supermarkets, indicating that their workers are at higher risk of work-related injuries than those in hypermarkets. The reasons for such vulnerability were not explored in this study.

### Socio-demographic characteristics

The injuries were predominantly in black female assistants and packers, possibly because these employees have the highest representation in the industry. Most of them worked in the hypermarkets and were employed for an average of 10 years. Similar studies indicated a high prevalence of work-related injuries among labourers and packers in grocery stores.<sup>6,7</sup> This study also revealed that there were more injured female employees, which concurs with similar studies conducted in the USA, that showed that women accounted for a higher proportion of work-related injuries.<sup>2,8,9</sup> Clarke found that women probably face more hazards in the grocery store industry than in private industry because of the types of jobs they hold in grocery stores.<sup>2</sup>

### Types of injuries

The type of injuries varied, with soft tissue and musculoskeletal injuries being most common. Lacerations often resulted from the use of knives and sharp cutting machines, such as by workers in the cold meat sections. This was reflected in sharp objects being a common source of injury. The high number of musculoskeletal injuries is unsurprising as it has been shown that these injuries, such as carpal tunnel syndrome and motion-related disorders involving the hand, wrist, elbow and shoulders, are common in the industry.<sup>2,10</sup> Grocery store work tends to be physical in nature and the tasks involve forceful, repetitive movements, extended duration, awkward positions and finally static postures which all lead to the development of muscle imbalances that cause a musculoskeletal injury such as carpal tunnel syndrome.<sup>10</sup> Also, ergonomic design of the scanners at the tills and the physical demands of the cashier's job that involves repetitive movements of the trunk, the turning of the wrist to scan a bar code and exertion of force on the fingers and the wrist places them at a high risk of carpal tunnel injury and back injuries.<sup>10</sup> A US survey of cashiers working in 15 supermarkets found that within an 8-hour shift an average cashier can easily handle between 500-1000 items per hour, which includes lifting over 2722 kg of groceries.<sup>11</sup> The activity involves wrist flexion and extension, which can be performed up to 600 times per hour.<sup>11</sup> The results further revealed that a faster cashier can easily handle a new item every 1-2 seconds,



**Table 5. Age group in relation to type of injury (N=586)**

Age group	Type of injury											
	Musculoskeletal		Soft tissue		Cut		Burn		Other		Total	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
21-35 years	47	8.0	82	13.9	26	4.4	10	1.6	14	2.4	179	30.5
36-50 years	52	8.9	83	14.1	23	3.9	13	2.2	9	1.5	180	30.7
> 50 years	61	14.4	97	16.6	34	5.8	22	3.8	13	2.2	227	38.7
Total	160	31.3	262	44.6	83	14.1	45	7.6	36	6.1	586	99.9

**Table 6. Gender in relation to type of injury (N=586)**

Gender	Type of injury											
	Musculoskeletal		Soft tissue		Cut		Burn		Others		Total	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Male	67	11.4	87	14.8	22	3.7	18	3.0	8	1.3	202	34.4
Female	115	19.6	156	26.6	55	9.4	23	3.9	35	5.9	384	65.5
Total	182	31.0	243	41.4	77	13.1	41	6.9	43	7.2	586	99.9

*“The type of injuries included varied, with soft tissue and musculoskeletal injuries being most common . . .”*

**Table 7. Occupation in relation to type of injury (N=586)**

Occupation	Type of injury (%)				
	Musculoskeletal	Soft tissue	Cut	Burn	Others
Assistants	9.8	12.2	6.9	2.1	3.1
Managers	3.8	4.5	2.4	1.0	0.9
Sales persons	4.5	3.9	1.2	0.7	0.3
Packers	8.6	13.4	2.9	2.1	1.5
Cashiers	4.3	6.9	1.0	1.5	0.7

**Table 8. Type of injury in relation to type of store (N=586)**

Type of store	Type of injury											
	Musculoskeletal		Soft tissue		Cut		Burn		Others		Total	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Supermarkets	111	18.9	194	33.1	49	8.4	25	4.3	25	4.2	404	68.9
Hypermarkets	66	11.2	55	9.4	33	5.6	16	2.7	12	2.0	182	30.9
Total	177	30.1	249	42.5	82	14.0	41	7.0	37	6.2	586	99.8

with an average repetition rate of 1442 movements per hour with the dominant hand.

**Sources of work-related injuries**

In any workplace, employees sustain injuries from various sources of hazards.<sup>12</sup> This was so in the study, with the main sources being slipping (incurring strains and sprains on stairways), objects falling from a height causing various

forms of injuries and cuts from handling equipment. Similarly, studies found that falling from stepladders during packing of items on upper shelves and being struck by an object were common.<sup>6,7</sup> Falls have also been found to be common mostly due to slippery floors,<sup>6,7</sup> and this was also identified in this study.

Although the study showed more cases of musculoskeletal injuries in 2005, but there was no significant

association with the source and type of job performed by workers. A 2006 study found back pain and back muscle fatigue at the end of the working day in 57.6% of supermarket cashiers.<sup>13</sup> Repetitive movements involving bending forward, leaning sideways and rotating the trunk, coupled with handling heavy items over long periods of time places them at risk of such problems. However, very few cases of back pain were found in this study.

## CONCLUSION AND RECOMMENDATIONS

Although the food retail industry may seem a relatively low risk sector for work-related injuries, this is belied by the number of accidents reported by workers in the study. Women workers, especially packers and assistants were most affected, probably because they represented the greatest proportion of workers. The frequency of musculoskeletal injuries is a concern as these can become long-term and result in adverse effects for the employee, lost time and low productivity. The need for ergonomic assessments and interventions seems to be indicated. Slipping and falling objects were common sources and these should be easily preventable.

Based on the findings of this study, the following measures are proposed:

- Emphasis on health promotion interventions that are aimed at increasing ongoing awareness and education of risk factors and hazards related to the work-related injuries.
- Hazards identification and risk assessments should be conducted at prescribed regular intervals in order to implement effective control measures.
- Further research in similar types of organisations and in different provinces is required on the incidence, prevalence and risk factors of work-related injuries in the food and retail industries are required. The results could be used to establish the pattern of work-related injuries in this industry.

## Limitations of the study

Due to the nature of the study design, the risk of information bias could not be overruled as researchers relied on data from the records and could not verify it with the employees who sustained work-related injuries. This study was based in one province and could not explore the patterns and sources of work-related injuries in similar industries for other provinces. Injury incidence and prevalence could not be established as only data for injured employees was collected.

## LESSONS LEARNED

- Grocery store work can be physically demanding and the tasks involve force, repetition, awkward posture, and static postures.
- Work-related injuries in the grocery store were predominantly among female and older workers.
- Injury frequencies in the grocery stores varied considerably among occupational categories, and were most common in packers and assistants.
- Musculoskeletal injuries and soft tissue injuries were common work-related injuries in the grocery store.

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