

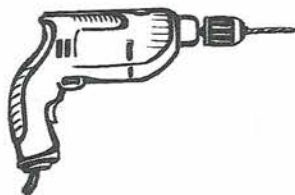
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- **Perceptions of the Pre-Employment Medical: Are We All Reading from the Same Page?**
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Perceptions Of The Pre-Employment Medical: Are We All Reading From The Same Page?

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Abstract

Background: The pre-employment medical assessment (PEM) is a relatively standard practice that is suggested to be driven more by perceived benefits than empirical evidence. This pilot investigation reports the perceptions of the key user groups involved in the PEM process.

Methods: A descriptive cross sectional study design was used to investigate the opinions of assessors, employers and employees involved in PEM. An anonymous survey was distributed to 40 individuals from each group. Areas covered included the objectives and benefits of assessment; consent; and duty of care.

Results: Sixty seven questionnaires were returned (56% response rate), with 21 from assessors, 18 from employees and 28 from employers. All groups considered the main aim of PEM was to reduce the risk of injury (88% of all respondents); and that it benefits employers (99%) and employees (87%). A lower proportion of employees considered safety to be an objective of the PEM, compared to assessor and employer groups ($p < 0.01$). A greater proportion of assessors considered there to be choice to participate in PEM, compared to employer and employee groups ($p < 0.05$). The duty of care of assessors was considered to be the employer by 49% of all respondents and to the employee by 48% of respondents, with no differences between user groups.

Conclusions: The PEM is perceived as useful in risk assessment and beneficial to employers and employees. There is a lack of agreement regarding consent, duty of care and its role in safety. Greater understanding of user views of the PEM is essential in promoting a focused and acceptable process.

Keywords:

Pre employment medical assessment. Perception. Objectives. Consent. Duty of care.

Introduction

There is little empirical evidence to support the use of pre employment medical (PEM) assessments in preventing occupational injuries and reducing sickness absence (Mahmud et al., 2010; Pachman, 2009, Roelen et al., 2006; Bigos et al., 1992). The ongoing use of PEM assessments has been considered as culturally driven, based more on tradition than evidence (Pachman, 2009; Houghton, Edmonson-Jones and Harris, 1989). The perceptions of PEM assessments have not been explored, despite perceptions being a driving force for their ongoing use. This pilot study investigates the perceptions of PEM assessments of key user groups in the process, including the potential employee, the employer and professional performing the assessment.

In the Netherlands, legislation has been developed that forbids the use of pre employment examinations unless the job poses special requirements for medical suitability (Sorgdrager, Hulshof and van Dijk, 2004; de Kort and van Dijk, 1997). The legitimacy of the need for the assessment is reviewed by a panel before assessment can occur. In other countries, including Australia, the purpose of the PEM assessment is often not as clearly defined (Whitaker and Aw, 1995). There is a shared lack of understanding of the goal of assessment by employers, employees and assessors.

The objective of PEM is considered in terms of determining capacity to work safely (AFOM, 1998; Cox, Edwards and Palmer, 2000; Kelman, 1985) preventing occupational injuries and disease (Sorgdrager, Hulshof and van Dijk, 2004; ILO, 1998) reducing the risk of injury to the worker and others

(Sorgdrager, Hulshof and van Dijk, 2004; ILO, 1998); collecting baseline data (AFOM, 1998; Kelman, 1985; Poole, 1999); adhering to legislative requirements (Serra et al., 2007); and identifying personal risks and increased susceptibility to occupational hazards (Poole, 1999). There is a lack of evidence that supports any of these at the prime objective of the PEM.

PEM assessments must be performed in an appropriate ethical framework (Poole, 1999). Employees should be protected from unnecessary examination and investigation (Serra et al., 2007). Consent to participate in these must be informed and freely given (NHMRC, 2007). The participation in a PEM assessment is often a mandatory requirement of the employment selection process. Participants are required to complete a consent form; however the validity of this is uncertain. The concept of consent in the PEM assessment is an area that requires further investigation.

There is a mixed duty of care given the multiple stakeholders (Serra et al., 2007). Assessors have a duty of care to the employer, with whom a contractual agreement exists, but also the potential employee in identifying potential health concerns, maintaining confidentiality and to not discriminate (Kelman, 1985; Sholz, 1998). The duty of care of the assessor is not determined by the party that pays for the assessment (Kelman, 1985) but is considered to be to all parties involved. The degree to which this is understood by key user groups is not clear. The perceived purpose of other occupational health services and the duty of care associated with these not shared between user groups (Bradshaw et al., 2001).

Williams et al. (1994) demonstrated a lack of agreement the between user groups of the perceived purpose of occupational health services between employers, employee representatives and providers of the service. Understanding the nature of these

differences is critical in the provision of quality services (Bradshaw et al., 2001). Similarly, the provision of quality PEM assessments requires a shared understanding of the potential purpose of these assessments, and exploration of the employees desire to have PEM performed (Harris, Dworking and Park, 1990; Conway, Simmons, and Talbert, 1993).

The extent and purpose of the PEM should be properly understood by the employer and the assessor and clearly expressed to the person being assessed (AFOM, 1998).

Understanding the purpose of the PEM is an integral component to performing the assessment, few studies have addressed the perceptions of the purpose of the assessment by each of these groups. It is the aim of this pilot study to assess the perceptions of the PEM assessment and determine whether there was agreement amongst user groups.

Materials and Methods

A cross sectional design was employed. Questionnaires were developed to include information regarding the objectives of the pre employment medical, perceived effectiveness, aspects of privacy, consent, control of information and duty of care. Responses were collected using a Likert scale for each item. Questionnaires were completed anonymously by three groups of respondents, potential employees, assessors and employers. This project was approved by independent ethics committee, Bellberry Limited.

Questionnaire

Questionnaires involved 9 main questions, with a further 24 components. The objectives of assessment were assessed by level of importance for each item. Respondents then identified the most important objective from the list provided.

Consent was considered in three different aspects. Respondents were asked to indicate if they agree that potential employees were had no choice to participate, withdraw consent or decline participating in the PEM.

The duty of care of assessors was considered in terms of towards

the employer or to the employee. Participants were asked to rank the level of duty of care, where 1 indicated the primary duty of care, 2 the secondary.

Participants

A total of 120 questionnaires were distributed amongst potential employees, employers and assessors. Due to the variable availability of each of these groups, different recruitment strategies were utilised for each group. Potential employees were recruited by opportunistic sampling. Forty questionnaires were placed in two clinics where pre employment medical assessments were conducted. Demographics of employees were collected. Emails were sent to forty employers who utilised the services of above mentioned clinics. The email provided an external link to anonymous web based questionnaire. Characteristics of each company were collected as part of the questionnaire. Emails were sent to forty individuals involved in assessment of pre employment medicals. This included doctors, nurses and occupational health technicians. The email provided an external link to anonymous web based questionnaire. Information regarding the degree of experience of each assessor was collected. Responses were collected over a four week period.

Data analysis

The data was analysed using the statistical package SPSS (version 18). Characteristics of each group were tabulated. Responses to all Likert scale items were analysed using the Kruskal-Wallis test. Items with less than 5 responses from any of the participant groups were not included in the analysis.

Results

The characteristics and response rate of each group of respondents is summarised in Table 1. A total of 67 questionnaires were returned, the overall response rate was 56%. There was an overall low response rate, with poor response from potential employees and assessors.

Table 1. Characteristics of each response group.

Potential Employees	
Response rate	18 / 40 (45%)
Age (mean +/- SD)	37.3 (13.50)
Highest education level	
TAFE/College/Secondary	13 (72.2%)
Employers	
Response Rate	28 / 40 (70.0%)
Industry	
Mining	11 (39.3%)
Background of respondent	
Health and Safety Officer	11 (39.3%)
Size of organization	
> 500 employees	13 (46.4%)
Assessors	
Response rate	21 / 40 (52.5%)
Role	
Medical practitioners	8 (38.1%)
Nurse or Technician	13 (62.01%)
Years of experience	
> 5 years	11 (52.4%)

There was an overall low response rate, with poor response from potential employees and assessors.

The mean age of potential employees was 37.3 +/- 13.5 years; the highest education level of the majority of respondents were not university qualified (72% of respondents).

Employers had the highest response rate of 70%. The majority were from the mining sector (39%), and tended to be health and

safety officers (39%).

The largest single group of assessors to respond were medical practitioners, including General Practitioners, doctors working in occupational medicine and Occupational Physicians (38%).

Due to the small sample size, differences within each respondent group were unable to be analysed.

Table 2. The most important objective of the pre employment medical assessment

	Employee		Assessor		Employers		Total		Kruskal Wallis test statistic	
	N = 18		N = 21		N = 28		N = 67			
	N	%	N	%	N	%	N	%	χ^2	p
The most important objective of assessment is										
Risk assessment	10	55.6	9	42.9	13	46.4	32	47.8	0.122	0.941
Safety	5	27.8	11	52.4	9	32.1	23	34.3	11.864	0.003

A greater number of respondents (48%) considered risk assessment as the most important objective of the PEM. There was no statistically significant difference between groups. The second most important objective was to assess the potential employee's ability to work safely in the role (34%). A significantly greater percentage of assessors considered safety as the most important objective (53%) compared to employees (28%) and employers (32%; $\chi^2 = 11.864$, $p < 0.05$).

Duty of care

The perception of duty of care was assessed by asking respondents to indicate who they perceived the main duty of care to be towards, to the employer or the potential employee. The perceived duty of care of assessors is shown in Table 3.

Table 3. The perceived duty of care of assessors

	Employee		Assessor		Employers		Total		Kruskal Wallis test statistic	
	N = 18		N = 21		N = 28		N = 67			
	N	%	N	%	N	%	N	%	χ^2	p
The duty of care of the assessor is to the										
Employer	8	44.4	10	47.6	15	53.6	33	49.3	0.439	0.803
Employee	9	50.0	11	52.4	12	42.9	32	47.8	1.221	0.543

Approximately 49% of all respondents considered the duty of care of assessors to be the employer, with no statistically significant difference between groups. Approximately 48% considered duty of care to be to the employee, with no statistically significant difference between groups. These results support the mixed duty of care model suggested by Serra et al.(2007).

Consent

Three aspects of consent were considered, however sufficient data for analysis was only obtained for one element. The results for the perceived ability to choose are shown in Table 4.

Table 4. The perceived ability to choose to participate in the PEM.

	Employee		Assessor		Employers		Total		Kruskal Wallis test statistic	
	N = 18		N = 21		N = 28		N = 67			
	N	%	N	%	N	%	N	%	χ^2	p
Employees have no choice in PEM	13	72.2	9	42.9	22	78.6	44	65.7	6.607	0.048

The majority of respondents agreed that employees have no choice in participating in the PEM (65.7%). The number of assessors agreed (43%) was less than the number of employees (72%) and employers (79%). There was a statistically significant difference between groups ($\chi^2 = 6.607$; $p = 0.048$). Assessors perceive a greater level of freedom in consenting of PEM than employees and employers.

Discussion

A pilot study to assess the perceptions of the PEM assessment and determine whether there was agreement amongst user groups was performed. The results indicate that the main perceived objectives of the PEM assessment are risk assessment and determination of a potential employee to safely perform their proposed role. Safety was considered to be more important by

assessors than employees and employers. The difference in opinion regarding these two aspects could be as a result of an increasing awareness amongst employers and employees about the risk assessment approach to occupational health and safety. This shift in approach may not yet be shared by those performing PEM assessments. Assessors not only need to maintain their own continuing medical education, but need to actively remain up to date with occupational health and safety standards, approaches and systems. Occupational health focused clinics provide an opportunity to maintain these standards.

The mixed duty of care of professionals performing PEM assessments was demonstrated in this study. Almost 50% of all respondents considered the duty of care to be to the employer and the remaining 50% considered it to be to the employee, with no differences between user groups. This difficulty in determining where the duty of care lies is an ongoing issue with PEM assessments. Kelman¹¹ highlighted that any professional requested to perform an examination owes that person a reasonable duty of care. A duty of care also exists with the employer who has contracted the service. The differences here most likely stem from the understanding of duty of care, and that duty of care, in itself, is a multifaceted concept. Clear definitions and boundaries regarding the PEM need to be established.

Involvement in any assessment requires informed consent from the candidate. In a treatment situation, consent is implied by attendance at a health clinic, or by means of a signed written consent form. The PEM process often forms part of the determination of the most suitable applicant for a proposed role. As such, there is often no choice for a candidate to participate; they are unable to decline participating, and unable to withdraw consent. In these circumstances, the question of informed consent is paramount. Informed consent suggests that an individual is aware of the purpose of the assessment, and freely decides to be involved. Given that there is no conclusive evidence for the use of PEM; and that decision not to participate will often result in not being considered for a role, it can be said that informed consent does not occur in PEM. This ethics of the PEM need to be further explored.

As the assessment is not for the purpose of treatment, the NHMRC statement on ethical conduct in human research (2007) could be used a framework for developing PEM assessments.

In utilizing a research based framework, approval of the PEM assessment should be obtained from an appropriate committee. In the Netherlands, PEM are performed only with the permission of the Occupational Health Service (de Kort and van Dijk, 1997). A similar approach should be considered in Australia. Although the overall perceptions of the PEM are similar among user groups, a committee of representatives from each group should be formed to review the validity of employers' requests for PEM assessments and ensure that these are ethically conducted.

Limitations

This study was limited by small sample size. Much of the data collected could not be reliably used in the analysis. A larger sample will allow further analysis of the differences between

different user groups, and within each user group. The questionnaire used requires further development, including the capture of qualitative data. Though more difficult to collect and analyze, this would provide better data on perception. Self selection bias is present in this study. Anonymous questionnaires would have been completed by those with an interest in the PEM process. A wider group of respondents needs to be engaged in future studies.

Conclusion

The effectiveness of pre employment medical assessments requires further analysis and review. The development and implementation of these screening devices requires involvement of all key user groups to ensure mutual understanding of its purpose and use.

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Injury Management Programs And Their Relationship With An Organization's Overall Health And Safety Management Program

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Abstract

The purpose of this literature review was to examine the impact that a workplace injury such as a herniated lower disc or "disc protrusion", which manifests as lower back pain, can have on a range of stakeholders and to identify the barriers that may exist that could impact on return to work. This common workplace injury demonstrated why a robust injury management program need to be multi-faceted and forms part of an organizations holistic health and safety management program.

Introduction

A herniated disc, manifesting as chronic back pain, is an occupational injury, which falls into the category of 'sprains and strains' of joints and adjacent muscle. In Australia, Sprains and strains accounted for 48.2% of all Workers Compensation lost time injury claims in 2007/2008 (ASCC, 2009). Note: disorders of muscle, tendons and spinal vertebrae (i.e. dorsopathies) are referred to as occupational diseases.

The complaint of back pain affects everyone at some stage of their life, with 90 percent of us experiencing significant interference with daily activities for at least 48 hours at some stage in our lives. Of these, 40 percent will experience recurring problems with their backs (Brown, 2002). Chronic back pain will be used to examine the direct impact and costs of this condition on employees and their families, and other

stakeholders such as the supporting community and employers. The significance of the indirect impacts and associated costs, which are often less extensively understood when it comes to managing a workers return to work, will also be reviewed. This paper will explore how direct and indirect impacts need to be addressed through a multifaceted injury management/return to work (RTW) program, barriers to the success of a RTW program, and the subsequent influence this type of program has on an organization's occupational health and safety program and workplace culture.

Impact of Occupational Injuries

The 'direct costs' associated with an injury or disease related to the back, are fundamentally the same as those that relate to any other type of occupational injury or illness. These costs are recognized as 'insurable costs' and directly relate to the compensation claim for time away from work, and medical and

disability expenses.

The average cost for lost time claims in Australian workplace in 2006/2007 was \$23,747. Of these claims, 22.7 percent

related to incident involving the back and 41.1 percent of serious claims are associated with sprains and strains (ASCC, 2009). Refer to figure 1.0 and 2.0 below.

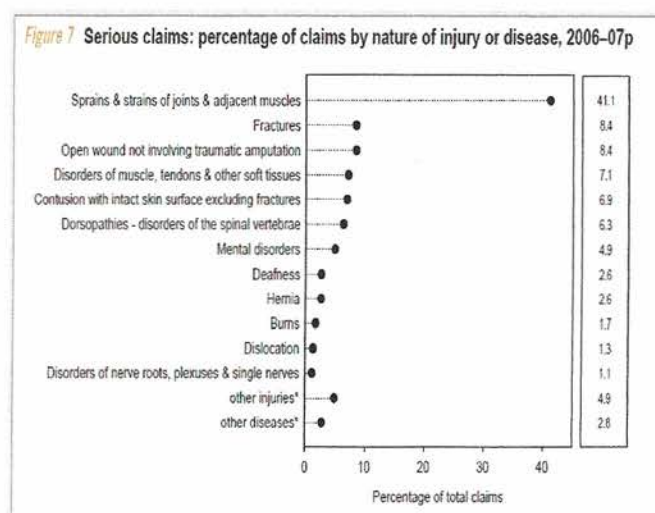
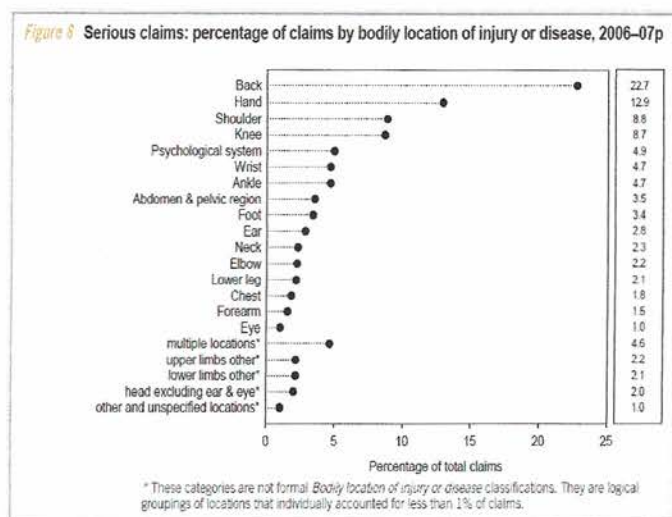


Figure 1 Percentage of claims by body part (2006-2007)

Figure 2 Serious claims by nature of injury (2006-2007)

Figure 2 below is a conceptual diagram of an iceberg (SafeSite.com, 2010), it has been adopted extensively in injury management literature and depicts the direct costs as a small portion of the overall costs associated with an injury/illness or disease. The 'indirect' costs are often referred to as 'hidden'

costs and are generally not considered 'insurable costs'. The impacts of an incident have been overlayed on the Iceberg model, this provides a snapshot of the complexities of the total costs associated with an incident.

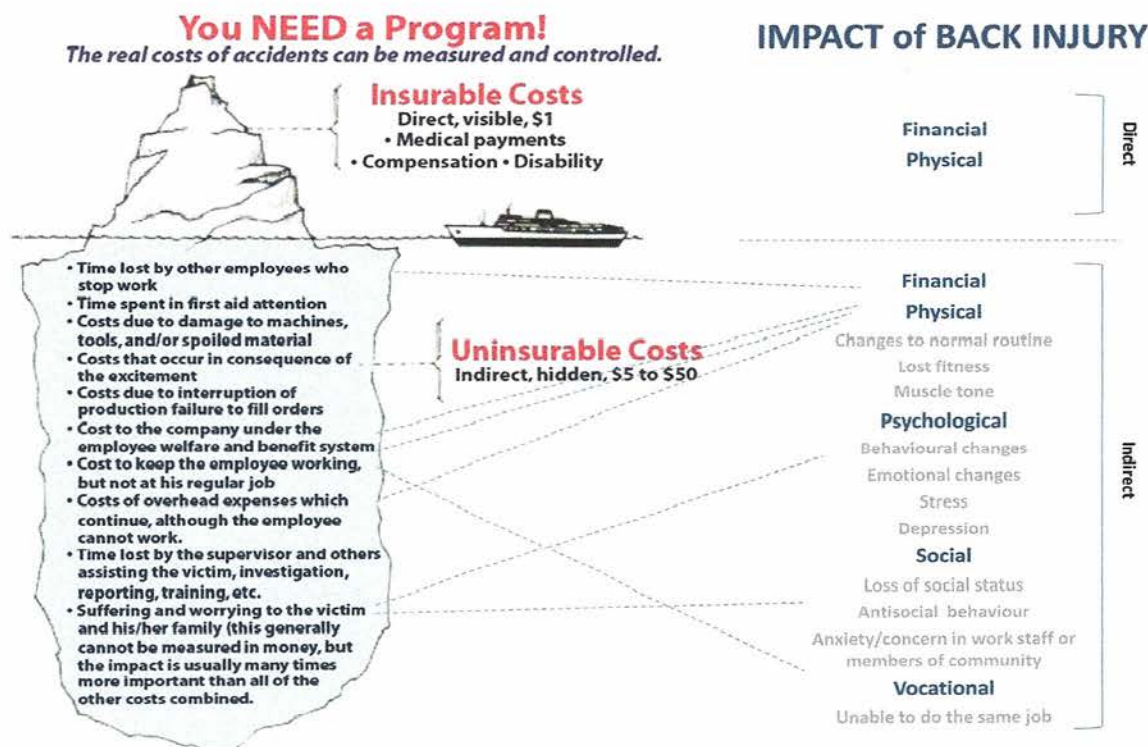


Figure 3 Iceberg- Insurable costs versus uninsurable costs for back injury (adapted by Bateman)

Upon closer review, much of these hidden costs impact on the employer, employee, their family/friends and the community, and far exceed the insurable costs.

Table 1 highlights the broad impacts of the key stakeholders associated with a workplace injury or illness/disease such as a back related injury:

Table 1 - Injury/Illness impact

Stakeholder	Impact/Cost
Employee	<ul style="list-style-type: none"> - Direct physical pain and suffering (incapacitated due to back pain) - Loss of function (e.g. limited mobility due to back injury) - Loss of family/community interaction (e.g. unable to play with children, participate in sports/hobbies) - Financial impact (e.g. prescribe amount/weekly payments may be considerably less than potential earnings*) - No longer able to care for family/friends, home (e.g. domestic responsibilities) - Indirect psychological factors (anger, depression, anxiety, fear) - Psychosocial impacts - stigma associated with back pain - not visible, made to feel fraudulent, malingerer, intimidated, leading to disincentive to claim. Confusion and stress associated with complexities of the claims process/return to work program <p><i>* Weekly payments capped at \$1904.40 in W.A. In some circumstances, unfit workers may receive less after 13 weeks as payments are reduced.</i></p> <p><i>* In W.A. employees 65 years or over can only claim weekly wage payments for 12 months after the date of their work related injury/illness</i></p>
Family & Friends	<ul style="list-style-type: none"> - Emotional pain and suffering - Emotional and physical support/care for the injured/ill worker - Impact on their time/availability - Financial impact where they are unable to continue to work due to support requirements - Financial impact due to additional costs associated with care/support (e.g. travel)
Community	<ul style="list-style-type: none"> - Emotional impact resulting from a serious injury/illness or fatality to community member(s) (May cause a psychological/emotional response - fear, anxiety, depression) - Infrastructure and resources to support the outcomes of an incident <ul style="list-style-type: none"> + Medical practitioners + Rehabilitation service providers + Government agencies-administration of legislation (e.g. WorkCover W.A., Dispute resolution directorate) + Insurance agencies + Legal resources (e.g. Common Law claims) - Medical/health care system costs
Employer	<ul style="list-style-type: none"> - Direct compensation - 'insurable' costs - Indirect 'insurable costs' (refer to figure 2) - Common Law claims * - Potential discrimination claims <p><i>*Where significant disability occurs i.e. 15-30% total bodily impairment exists or 30% or more according to schedule 2 Table (WA Workers Compensation Act)</i></p>

In the case of the back injury, the primary impairment relating to the physical nature of the injury (e.g. herniated disc) may not have as great an impact as the secondary effects that may occur as a direct result of the injury to the worker, for example chronic back pain. Psychological, environmental and behavioral factors have a very important and central role in the experience of pain. Together they shape the way that a person constructs the meaning of pain, the way in which they cope with pain are important

issues to be considered when assessing and managing pain (Unruh & Henriksson, 2002).

In relation to the direct impact on an employer, the following figure depicts the breakdown of direct compensation payment types, with the majority relating to weekly payments for the injured/ill worker (ASCC, 2009).

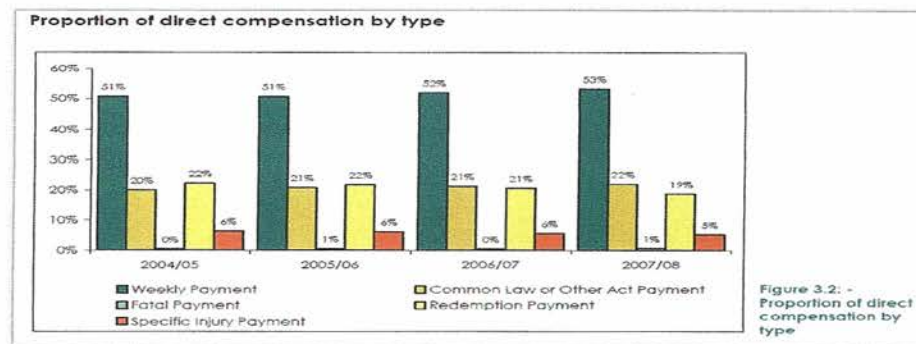


Figure 4 Workers compensation payments

Legal obligations

Worker's compensation insurance projects employers from financial costs when a worker sustains a work-related injury or disease. It protects injured workers by providing weekly payments to cover loss of earning capacity, payment of reasonable medical and rehabilitation expenses and other entitlements (Workcover WA, 2007).

The legal obligations embodied within the Western Australian Worker's Compensation Act (1981) and Regulations (1982), referred to herein as the 'Act' and 'Regulations' respectively, are summarized below for each of the key stakeholders involved in the Workers' Compensation process.

Government - The West Australian Government, through the WA Workers' Compensation Commission, otherwise known as 'WorkCover W.A.', is the statutory authority responsible for administering, updating and governing compliance with the legislation and supporting documents, including, but not limited to:

- Western Australian Workers' Compensation Act (1981)
- Western Australian Workers' Compensation Regulations (1982)
- Injury Management Code of Practice 2005 (The Code)
- Guidance Notes for the Injury Management Code of Practice

Employer - Workers compensation insurance is compulsory and employers are required to take out a policy with an approved insurance company to cover all the workers they employ.

The employer's legal obligations apply to all 'workers' as defined under the Act (Section 5). The employer's liabilities for contractors and subcontractors are also addressed under the Act.

The Act (Section 164) also has provisions from employers who wish to become 'self-insured' and in doing so provide their own insurance coverage for their workers.

In summary, employers shall:

- Establish an injury management system/program. [Refer to WA Code of Practice (Injury Management), 2005].
- Establish a Return to Work Program (RTW) - where a medical practitioner indicates that it is required for an injured worker.
- Provide a copy of the Employers Injury Management System if requested by an employee.

- Once the insurer gives approval, immediately begin workers' compensation payments.
- Forward all accounts and invoices relating to the workers medical treatment and other approved entitlements to the insurer.
- Hold open the position held by the worker for 12 months, if it is reasonably practicable to do so.
- Where the job is not available, or the worker is no longer able to perform the same job, provide a similar position for which the worker is qualified and capable of performing, that is comparable in status and pay.
- If an employer wishes to terminate the employment of a worker within the 12 months time frame mentioned above, they must notify the worker and WorkCover WA 28 days written notice of their intention.
- Refer matters that cannot be resolved to the Dispute Resolution Directorate.
- Injury management team may refer the injured worker to a vocational rehabilitation provider.
- Where a worker is certified as unfit for work, the employer must still pay appropriate workers' compensation weekly payments and employee entitlements.
- Where a worker is certified as partially unfit for work and are dismissed or resign, in some circumstances, the employer may still be responsible for paying appropriate workers' compensation payments.
- An employer has the right to arrange a medical review via the insurer before or after a claim has been accepted.

Employee - Any worker, who suffers a work related injury/illness or disease and needs medical treatment and/or cannot work because of the injury/illness or disease, is entitled to claim workers' compensation (WorkCover, 2009).

In summary, the employee shall:

- Seek first aid if injured or ill.
- Report the incident to the employer (e.g. supervisor) as soon as possible.
- Visit a doctor, either employers or doctor of own choice and obtain an initial First Medical Certificate.
- Fill in workers' compensation claim form 2B (available from employer, insurer or WorkCover WA).
- Subject to the appropriate conditions, attend appointments with an 'approved' medical practitioner where the employer has arranged for an independent examination.

- Where a claim has been accepted, forward all accounts/invoices relating to the medical treatment and other approved statutory allowances to the employer or their insurer, as soon as reasonably possible.
- Where requested, the employee may need to provide written consent for their employer and doctor/medical practitioner to speak to each other. If an employee does not provide consent, it may be difficult for the employer and their insurer to determine liability for the claim.

Where liability is disputed or deferred, or an employee does not hear from the insurer within 17 days of making the claim on the employer, the employee can contact the WorkCover WA Dispute Resolution Directorate to seek resolution.

While the workers claim is being assessed, the employee is able to request that the employer pay accrued leave (e.g. annual or sick leave). This does not indicate liability being accepted on the behalf of the employer, but provides interim financial support for the employee whilst liability is being determined. Where the claim is approved, weekly payments commence and the leave would need to be re-instated.

If an employee resigns and gets another job, they must inform the employer or insurer in writing within seven days. The employee may still be entitled to partial incapacity payments or other benefits.

Insurer

In summary the Insurer shall:

- Within 14 days, notify the employee and employer, in writing, whether the claim has been accepted, disputed or undecided, and explain the basis for the decision.
- If the employer is a self-insurer, they must notify the employee whether the claim is accepted, disputed or undecided within 17 days of receiving the claim.
- The insurance company may assign an assessor to investigate the claim. The employee can decide whether they agree to be interviewed by the assessor and may also request that a person of their choice accompany them.
- Where an insurer advises the employee that they dispute the claim or are still undecided for more than 10 days after notifying the employee, the claim will be deemed to be in 'dispute'.

Barriers to return to work

While there is a Workers Compensation legal framework to support both the Employer and Employee in relation to Workers Compensation, there are a range of barriers that may exist that impact the processing of a worker's compensation claim and the return to work program.

Injury management is defined in the Act as *'the management of*

workers' injuries in a manner that is directed at enabling injured workers to return to work'. It is the responsibility of both the employer and employees to cooperate in this process, where it has been medically supported by an approved practitioner.

Where direct cooperation does not occur between the employer and employee, or where other barriers or obstacles exist, the employees ability to return to work or the rate at which they are able to return to work may be impacted.

The following are examples of barriers that may hinder the workers compensation process and return to work program:

Poorly designed return to work program

- The worker is encouraged to return before he/she is fully fit.
- The worker is over-eager to return to work.
- The people involved in the persons return may not be aligned and have conflicts of opinion relating to the return to work process.
- Insufficient employee involvement in return to work program.
- Insufficient involvement from other parties in return to work program (e.g. employer, union).
- Lack of understanding of disability and therefore development of an inappropriate return to work program.
- Limited return to work alternatives.
- Poor coordination of rehabilitation program and supporting resources.

Diagnosis and Treatment

Delays can be experienced where the impairment is mis-diagnosed or treated incorrectly. This is particularly relevant to back injuries and associated back pain. For example, the employee may be sent to multiple medical practitioners, may be given an inappropriate return to work program, may not receive the appropriate claim entitlements, etc.

The more complex the nature of the injury or illness, the more room there is for error and delays, hence the importance of having a clearly defined process for injury management and the supporting infrastructure from relevant medical practitioners.

Claims Administration – Employer, Employee and Insurer

At any stage of the claims management process, obstacles or delays can be experienced. For example, if one or more parties does not fulfil their fundamental legal obligations under the Act;

The following two figures depict the average days taken to process claims by each of the key parties in Western Australia 2004-2008 (WorkCover, 2009). Note in Figure 4 there is a longer time frame associated with lodging claims associated with disease than injury. These delays are largely due to the complex nature of disease diagnosis.

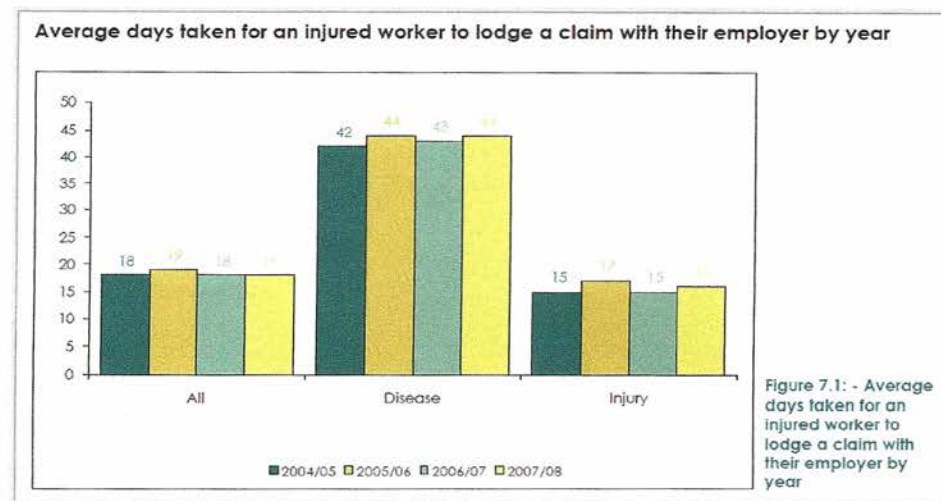


Figure 5 Employee - Employer - Insurer claims management duration

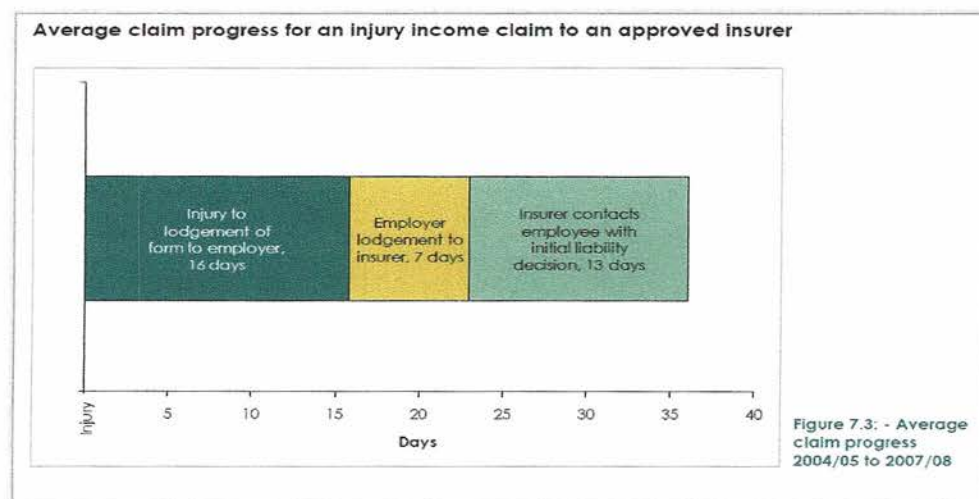


Figure 6 Average claims process

Impairment assessment required

Where a worker and employer are unable to agree on the degree of impairment associated with a workplace incident, an approved medical specialist will be required to undertake an 'impairment assessment' to determine the degree of permanent impairment or degree of permanent whole of person impairment. This assessment could potentially delay the claims process, but forms the basis for access to certain workers' compensation entitlements.

Dispute

Where a claim is not agreed between all parties and legal obligations are not fulfilled, the claim may be in dispute and the matter is referred to the WA Dispute Resolution Directorate for a decision. This process may be further delayed if the employer is ordered to make an application for an arbitrator to determine liability.

Disputed claims are an impediment to return to work since they create a conflict of interest in the injured worker. It is not in the

worker's interest to return to work until after the claim is settled, since return to work will impact significantly on the cash settlement.

Dispute claims are more likely to occur if a worker has sustained a more serious injury, experienced greater lengths of time lost, or who failed to return to work, or in cases in which there is conflicting medical opinion regarding the extent and severity of the injuries (WorkCover, 2009).

Psychological factors

The 'psychological factors' identified in Table 1.0, including distress, beliefs and attitudes, pain behaviour, and pain coping strategies, have considerable influence on pain and disability and can have a stronger influence on the outcome than the initial biomedical/physiological factors associated with back pain. It's also worth noting that distress and confusion about previous treatments can have a powerful influence on a patient's reaction to pain and disability (Brown, 2002). Where a worker experiences these additional, secondary impacts, they may

present additional barriers to the successful return to work if not diagnosed correctly and managed appropriately.

Gender

There is some evidence in literature to suggest that 'gender' plays a role in relation to the impact of injuries/illness, equity

associated with workers compensation and return to work rates (Guthrie & Jansz, 2006). Figure 6 depicts the average number of days off for a claim, with women requiring more days off than men (WorkCover W.A., 2009).

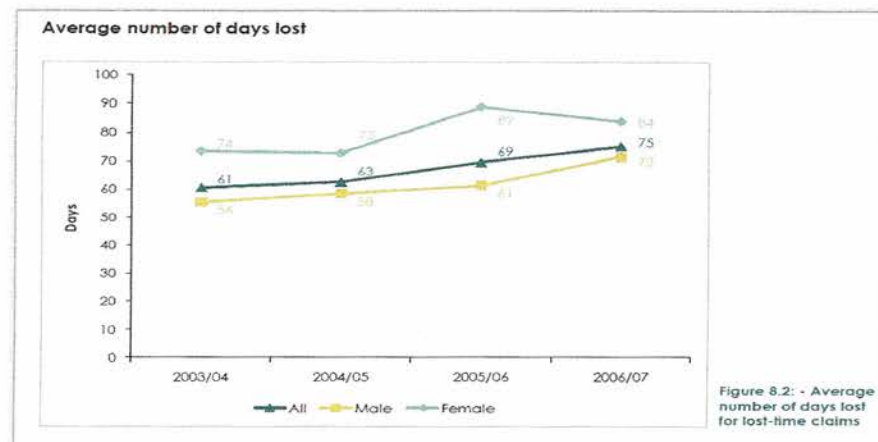


Figure 7 Average number of days lost

The below injury/illness statistics indicate that women are sustaining a higher rate of sprains and strains and musculoskeletal injuries/illness than men, this is likely to be due to the nature of their work in the industrial environment, but are taking less days off per claim than men for these specific types of injuries/illness (WorkCover W.A., 2009).

Table 2 Percentage of lost time claims and average duration

	Percentage of lost-time claims				Average duration (days)			
	2004/05	2005/06	2006/07	2007/08	2003/04	2004/05	2005/06	2006/07
Males								
Sprain/strain	47.4%	46.0%	44.7%	45.5%	78.6	76.9	98.2	95.6
Open wound	16.3%	16.2%	16.1%	15.3%	14.2	18.3	22.3	14.7
Fractures	8.1%	8.7%	9.4%	10.5%	116.0	72.4	68.9	80.8
Confusion & crushing	9.9%	10.9%	11.4%	10.4%	52.4	54.4	69.3	69.4
Other injuries nec *	3.3%	3.3%	3.9%	4.1%	73.8	62.2	67.2	43.6
Musculoskeletal system disorders	3.1%	2.5%	2.8%	2.8%	125.0	127.7	186.9	148.8
Burns	2.3%	2.4%	2.6%	2.4%	6.7	17.3	7.2	18.4
Foreign body	2.9%	3.0%	2.1%	2.2%	7.4	2.2	36.4	5.4
Hernia	2.0%	1.8%	1.7%	1.7%	125.2	21.5	52.2	89.5
Superficial injury	1.5%	1.5%	2.0%	1.6%	54.6	36.9	8.2	41.7
Other diseases	1.6%	1.8%	1.8%	1.5%	54.8	78.3	79.0	44.2
Mental disorders	1.1%	1.1%	0.9%	1.3%	87.3	111.4	125.4	134.2
Skin disorders	0.4%	0.7%	0.6%	0.8%	29.7	61.7	38.7	32.5
Multiple injuries	0.2%	0.1%	0.1%	0.1%	256.8	2310.5	294.6	2.0
Females								
Sprain/strain	57.5%	56.1%	55.0%	54.2%	64.2	72.5	73.0	83.1
Confusion & crushing	11.3%	12.3%	12.4%	12.7%	35.6	34.1	38.0	52.5
Fractures	5.9%	6.2%	6.9%	7.9%	92.2	95.7	105.2	118.3
Open wound	6.8%	6.8%	7.2%	7.1%	19.6	20.7	20.2	25.2
Mental disorders	4.8%	4.5%	4.1%	4.6%	90.0	102.1	97.6	132.1
Musculoskeletal system disorders	5.2%	4.9%	4.5%	4.2%	110.7	108.1	156.7	148.2
Other injuries nec *	2.6%	3.5%	3.2%	3.5%	57.3	53.8	49.3	92.4
Burns	2.1%	2.2%	2.5%	2.2%	82.9	16.5	27.8	16.5
Other diseases	1.8%	1.9%	2.0%	1.8%	50.2	73.8	55.9	70.4
Superficial injury	0.8%	0.7%	1.1%	0.9%	21.3	31.4	8.3	18.2
Skin disorders	0.4%	0.6%	0.6%	0.5%	16.7	47.3	67.1	51.5
Hernia	0.4%	0.1%	0.3%	0.3%	34.6	33.7	62.8	68.8
Foreign body	0.4%	0.2%	0.2%	0.1%	6.2	3.5	4.6	18.4
Multiple injuries	0.0%	0.1%	0.0%	0.0%	253.0	257.5	1533.3	601.3

*not elsewhere classified

Literature reviews and research undertaken by Guthrie and Jansz provides evidence that 'gender' plays a role in relation to the

impact of injuries/illness, equity associated with workers compensation and return to work rates in Australia (Guthrie &

Jansz, 2006). The financial/economical, physical, psychological and social factors that can impact on an injured or ill worker, have been found to be very apparent in women where they are the primary person responsible for domestic duties and/or of migrant background (Steward, Doyle, Clapham et al).

In the late nineties, Quinlan found that while women make up approx 40% of the workforce, they only represent 27% of the compensation claimants (Quinlan, 2007). Further studies indicate that women are more likely to be intimidated by the workers compensation process which inadvertently acts as a deterrent for

making claims, more likely to have claims disputed, less likely to succeed before review boards, receive less compensation due to receiving lower wages than their male counterparts and overall are less likely to return to work at all.

Age

The older people get, the longer it takes them to recover and return to work, and there is also evidence to suggest that the older the person the less likely they are to return to work at all. Refer to Table 11.1 (WorkCover W.A., 2009) below.

Table 3 Number of lost time claims and average working days lost

	Number lost-time claims				Average working days lost			
	2004/05	2005/06	2006/07	2007/08	2003/04	2004/05	2005/06	2006/07
All persons								
15-19	1436	1404	1517	1418	30.4	19.8	25.5	29.8
20-24	2283	2183	2188	2122	33.1	34.2	31.4	34.9
25-34	4316	3940	3806	3653	52.4	52.7	63.4	65.0
35-44	4593	4430	4234	4292	70.0	78.1	83.3	88.6
45-54	4164	4037	4077	4284	76.2	81.0	94.2	103.3
55-59	1305	1327	1436	1483	77.1	81.9	76.2	89.9
60-64	603	608	659	793	81.6	60.3	71.4	88.0
65+	142	164	177	199	47.2	40.1	55.5	49.0
Unknown *	12	7	12	13	21.0	15.7	28.3	13.3
Total	18854	18100	18106	18257	60.6	62.6	69.5	75.2

Socioeconomic status

Research also indicates that blue-collar workers are less likely to return to work than white-collar workers. This finding may be related to the fact that blue-collar workers may experience more of the negative factors associated with the nature of their work e.g. repetitive tasks, closely supervised, little decision making, performing long hours which may be away from home, feeling that their tasks are under-valued or useless, and not receiving the financial gains they feel they deserve.

Workplace Occupational Health and Safety Programs and Culture

The culture of an organization, in particular the 'health and safety culture' has been seen to impact how people respond to injuries/illness in the workplace, both in a positive and negative way. For example, a negative workplace culture in which workers are made to feel undervalued for having an injury/illness, by fellow employees and/or employer, will drive certain behaviours and in doing so can initially create specific barriers to reporting workplace injuries and illness and is more likely to negatively influence the injury management process.

Evidence from workers compensation statistics/performance and literature reviews suggests that the success of return to work programs is related to higher perceived standards of occupational health and safety characteristics of workplaces, better perceived

methods of information dissemination to workers about their rights and entitlements and by the status of the claim for workers compensation (disputed versus not disputed) (Kenny, 1998).

Discussion

Return to work following soft tissue injuries such as low back pain and repetitive strain injuries has become a critical issue for employers as well as for insurers due to the high costs associated with this disability.

Incurring an occupational injury/illness has many consequences for a worker. Each of the consequences has the potential to impact on the other, so that a loss of income impacts simultaneously on self-esteem, marital relationships and standard of living. These person variables interact with system variables to influence the return to work outcomes (Tate, 1992).

Figure 7 below depicts how the impact of an occupational injury/illness to a worker is embedded in a complicated web of reciprocal relationships with other individuals, groups and social institutions (Dembe, 2001). It highlights why an injury management program will need to address the broad range of impacts and legal obligations underpinning all of the relationships depicted here and why there exists so many opportunities for barriers to impede the return to work process if not managed effectively.

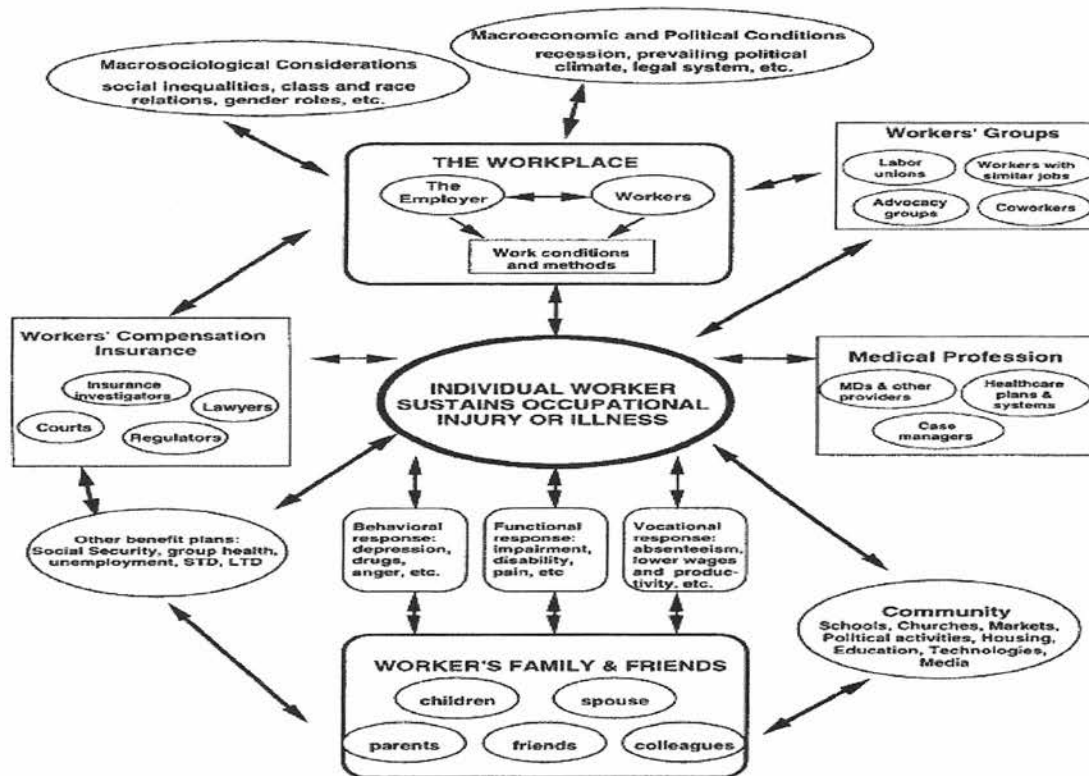


Figure 8 The complex relationships- social context of occupational injuries and illness

Given the multi-dimensional nature of the impact an injury or illness can have on a worker, combined with the complexities associated with the legal system supporting workers compensation, it becomes evident that an equally multi-faceted injury management/return to work program is required if a worker is to be restored successfully back into the workplace.

Such a program will need to incorporate the services of a multi disciplinary team, and may include services from psychologists, rehabilitation/medical specialists, and legal representatives to interpret the complex nature of the legislation that underpins a workplace injury/illness.

Case studies undertaken on workers in relation to their level of satisfaction with their employer and associated occupational health and safety programs directly reflects on the number of claims disputes raised and the likelihood of the workers returning to work after an injury/illness. In general workers are 'happier' from a workplace in which there is a clear health and safety policy, formalized structures for information sharing and reporting, operational health and safety committees, training programs, health and safety procedures and the presence of occupational health and safety personnel (Kenny, 1998). These workplaces valued return to work programs and incorporated them into their overall health and safety programs.

To overcome the medical and legislative barriers associated with

a worker's compensation claim, it is important that those involved in assessing the claim understand the nature of the impairment and subsequent loss of ability. For example, back problems have a nasty tendency to become chronic and the outcome is heavily dependent on the attitude of the patient and the healthcare professional. Unhelpful beliefs must be challenged and individuals involved in their own recovery program (Brown, 2002). The classification of the disability will influence the claims entitlements, the mental state/outlook of the employee, and will determine the type of return to work program required.

The return to work program should be a collaborative process in which all parties involved receive the appropriate level of information, education and training to support the program and to ensure that they understand the full impact of the primary and secondary impacts of an injury or illness.

Conclusion

Disability attributable to back pain in people of working age is one of the most spectacular failures of modern health care in the industrialized world. Its greatest impact is on the lives and families of those affected (Brown, 2002).

If employers do not manage an injury or illness effectively through a robust multidimensional return to work program that is clearly communicated to all stakeholders, directly engages and values the employees input and addresses all facets of the direct and indirect consequences of chronic back pain, the chances of

successful rehabilitation of the worker will be greatly diminished, as will be the likelihood of developing and sustaining a positive occupational health and safety culture.

Recent research has brought into sharp focus the importance of the employer-employee relationship, appropriate channels for information dissemination and advocacy in the workplace for the injured worker (Kenny, 1998). A workplace in which these positive values are instilled within all parties associated with the injury management program will be more likely to overcome the range of barriers described previously, including an intolerance of the detrimental social impacts of age and gender and the stigma associated with back injuries, and will have a strong influence on the workforce to the extent that it may also reduce the likelihood or severity of the secondary impacts that a worker may experience, such as chronic back pain.

A positive health and safety culture that is fostered by an employer who recognizes the value in prevention rather than being driven by workers compensation costs, will implement an injury management program as part of the organizations holistic Health and Safety management program.

Failure to recognize the potentially complex nature of workplace injuries/illness and their relationship with an organizations overall health and safety management program increases the risk of unsuccessful rehabilitation of workers and increased costs (direct and indirect) of work place injury/illness to workers, employers, and the community (Kenny, 1998).

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Occupational Noise Induced Hearing Loss: A literature review of its impact in the Australian Capital Territory

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Abstract

Objective: The aim of this article was to review current literature surrounding the topic of Occupational Noise Induced Hearing Loss (ONIHL), its impact on sufferers and the barriers on returning to work.

Materials and Method: The review of literature was undertaken using EBSCO and OVID databases and within Google Scholar search engine. Literature included in this review was all published after the year 2000, with particular attention to Australian statistical and legislative data.

Results: ONIHL is a condition predominately of men, presenting in the 50-55 year age group. It is of complex aetiology with much research linking it to prolonged and excessive noise exposure in a workplace setting. The research explored the impacts ONIHL had on employees, their families, employers, insurers and the wider community. Barriers were encountered by all key stakeholders in returning employees to work.

Conclusion: ONIHL is a growing problem and likely to be under-reported due to stigma associated with hearing loss and the age in which the condition presents. The complex issues surrounding the condition require further research to assist those currently suffering the condition and effectively prevent future employees developing debilitating levels of hearing loss.

Introduction

The detrimental effects associated with excessive or repetitive noise exposure within a work environment was first discussed by the pioneers of Occupational medicine centuries ago. Occupational Noise Induced Hearing Loss (ONIHL) accounts for 16% of adult acquired hearing loss worldwide (Nelson et al. 2005). In Australia it is estimated that 1 million employees are exposed to potentially injurious noise levels annually, with approximately 16 500 workers' compensation claims recorded between July 2002 to June 2007, for industrial deafness involving permanent impairment due to noise (Burgess, 2010). A number of the research articles suggested that assessing the magnitude of ONIHL by number of compensation claims would lead to gross underestimation of the problem (Burgess, 2010; Center for Disease Control and Prevention, 2001). The burden of disease was estimated at \$2.9 billion (Access Economics, 2006).

Occupational hearing loss is predominately caused by repeated exposure to excessive noise over prolonged periods causing irreversible sensorineural damage to the cochlea (Kurmish and Apps, 2007; Thorne et al, 2008). Other contributing factors include exposure to vibrations, ototoxic chemical and smoking (Burgess, 2010; Concha-Barriento, Campbell-Lendrum and Steenland, 2004; Kurmis and Apps, 2007; Rachiotis, Alexopoulos and Drivas, 2006). ONIHL manifests slowly, with few obvious symptoms. Some employees experience symptoms of tinnitus, or ongoing ringing in the ears. For others their only symptoms include difficulties in communication, especially in the presence of background noise (Concha-Barriento et al, 2004; Kurmis et al, 2007; Nelson et al. 2005). ONIHL is not a finite condition, hearing loss increases with ongoing noise exposure.

Globally the industries with the highest reported incidence of ONIHL include construction, military, utilities, mining, transport, and manufacturing, with Australian data concurring (Australian Safety and Compensation Council, 2006; Center for Disease Control and Prevention, 2001; Concha-Barriento et al, 2004; Nelson et al. 2005). Statistically men have the highest incidence of ONIHL compensation claims, with 94% of the claims made in 2001/2 made by men in the 55-59 year age group (Australian Safety and Compensation Council, 2006).

The primary treatment for ONIHL should be prevention. Prevention can be undertaken through implementation of organizational and engineering controls and development and adherence to International and National Standards. Engineering controls include decreasing sound produced, muffling, acoustic barriers, and lastly PPE (Australian Safety and Compensation Council, 2006; Center for Disease Control and Prevention, 2001). Organizational controls include the implementation of workplace noise assessments, employee audiometric monitoring, education programs and comprehensive record keeping (Australian Safety and Compensation Council, 2006; Center for Disease Control and Prevention, 2001; Palmer, Cox and Brown, 2007).

Research Methodology

In undertaking this literature review, searches were undertaken in EBSCO and OVID databases and within Google Scholar search engine. Search terms included "occupational hearing

loss", "work and hearing loss", "NIHL" and finally "ONIHL". Only articles published in English, with the full text available online and a publish date of after 2000 were included in this review. Of the 2042 articles sourced during these searches, sixteen articles were included in this review. These articles were preferred as they cited Australian statistical and legislative data. Reference was also made to two Australian Standards and various legal documents pertaining to the Workers Compensation laws associated with ONIHL. These documents were then sourced on the web, to provide a detailed understanding of their relevance to the topic of ONIHL.

Results

Impacts on Employee

There has been significant research into the effects that working in noisy environments has on employees. Noise has been found to cause tinnitus, hypertension, fatigue and sleeplessness, impaired communication, increased risk of accidents and injuries (due to decreased ability to recognise warning signs), impaired decision making, annoyance, and memory loss to mention just a few (Australian Safety and Compensation Council, 2006; Nelson et al. 2005; Palmer et al, 2007; Picard et al 2008; Timmins, 2010).

The insidious nature of ONIHL means that it often goes unnoticed until significant hearing loss has occurred. The most notable effect of ONIHL appears to be impaired communication, in work, social and family settings (Australian Safety and Compensation Council, 2006; Concha-Barriento et al, 2004; Palmer et al 2007). People with ONIHL also report feelings of loneliness and isolation, anxiety and depression, irritability, decreased quality of life and poor self-esteem associated with the stigma (actual or perceived) attached to hearing loss (Kurmish, et al, 2007; Rachiotis, et al 2006; Shield, 2006; Yorgason, Piercy and Piercy, 2007).

Impact on Families/Socially

Hearing loss in a family member can cause elements of both unity and division between those involved. Research indicates that interdependence occurs between spouses, with one member often acting as an interpreter or a hearing aid especially in a public setting (Shield, 2006; Yorgason et al, 2007). The appearance of everything being 'normal' appears to be an important outcome for all family members of person affected by ONIHL. This unity especially found between spouses can also have negative impact on their relationship. Yorgason et al state "hearing spouses often performed caregiver-like roles and it is often difficult to keep a healthy balance between support and autonomy" (2007, p. 223). Upsetting this balance can lead to frustration, anger and resentment. Shield (2006) discuss how communication impairment at home may lead to a poor relationship with children, as they sometimes gravitate towards the normally hearing parent for discussion and decision-making.

Socially the effects of ONIHL are often devastating. Sufferers of ONIHL have been found to withdraw from all situations involving group discussions, noisy public places, or social activities choosing not to form or maintain previously established relationship (Shield, 2006; Timmins, 2010; Yorgason et al, 2007). This lack of interest in maintaining a social network can also increase the strain on the family unit. Social isolation can be

linked to the stigma associated with hearing loss. ONIHL sufferers often report hearing loss to be associated with being stupid or old and believe their opinions are less valued, and don't want to both people by continually making them repeat themselves (Concha-Barriento et al, 2004; Shield, 2006).

Impact on Employer

ONIHL has multiple effects on the employer and the workplace. The employer can suffer direct costs associated with workers compensation claims and medical and rehabilitative expenses (Concha-Barriento et al, 2004). However the indirect costs are extensive and costly. These include losses to productivity, higher staff turnover, high levels of absenteeism and costs associated with the implementation of engineering and organizational controls to prevent excessive noise exposure (Brouwer et al, 2002; Concha-Barriento et al, 2004). Research undertaken by Access Economics (2006) disagrees, finding that staff with hearing impairment often have less time off work, and work harder to cover their disability. Decreased or inefficient communication has been linked with an increased potential for injury and accidents within a workplace (Kovalchik et al 2008; Picard et al, 2008)

Employee Obligations

In the Australian Capital Territory (ACT) employees are covered by the legislation written in the Workers Compensation ACT 1951 [A1951-2] (ACT Parliamentary Council, 2010 a) and Workers Compensation Regulation 2002 [SL2002-20] (ACT Parliamentary Council, 2010 b). If the employee is injured or the workplace causes illness the employee is mandated and therefore obliged to:

- Early notification of injury or illness (p.92)
- take part and cooperate in the establishment of a personal injury plan (p.92)
- comply with reasonable obligations imposed on the worker under the worker's personal injury plan, including any obligation to receive medical treatment or rehabilitation services (p.92)
- Nominate a medical practitioner for care of injury, and authorize the nominated practitioner to provide relevant information, and
- The injured worker must make all reasonable efforts to return to work with the worker's pre-incapacity employer (that is, the employer liable to pay compensation to the worker) as soon as possible, considering the nature of the injury (p.94)"

(ACT Parliamentary Council, 2010a)

The National Occupational Health and Safety Commission (2000 and 2004) Codes of Practice state, in addition to complying with legislation, employees must adhere to "established workplace procedures and cooperate in all activities that have as their objective the protection of hearing at work and the minimisation of ONIHL" (p.8).

Barriers hindering return to work for Employee

When returning to work following the lodgement of a workers' compensation claim for ONIHL, employees can encounter barriers which hinder the smooth transition in returning to the

workforce. Employees often suffer alterations in communication, this was often present before the lodgement of the claim, however the amount of hearing loss will have been assessed, which may affect the role within the workplace and how their co-workers interact with them. This may lead to retraining for another job or altering the work environment in which they are used to. Often workers with hearing impairment were treated as if they were less intelligent and old (Sheild, 2006; Yorgenson et al 2007). Due to the complex aetiology of ONIHL workers compensation cases can be prolonged in reaching a conclusion (Kurmis et al, 2007). This long time-frame associated with establishing validity of workers compensation claim, may work as a barrier of distrust, frustration, anger and resentment between employee and employer.

Barriers encountered by employer

There are many issues that act as barriers for the employer in having a employee with ONIHL return to the workplace. Predominately the issues surround safety; recognizing the potential for injury caused by noise, assessment of noise in workplace and implementation of noise control measures, establishing a workplace culture of noise awareness and hearing protection, and education of staff. Work health and Safety Legislation require employers to make reasonable adjustments to the workplace to accommodate the employees return to work (ACT Parliamentary Council, 2010 a and b; Timmons, 2010) an example may include implementation of multi-sensory warning and alert signals. When the level of ONIHL is assessed to be inappropriate for return to the employees previous position and reasonable adjustments are unable to be made the employer is required to retrain the employee to a suitable role (ACT Parliamentary Council, 2010 a). This may often prove difficult as the employee may not have enough suitable roles available, especially in the case of small businesses. Many of the barriers encountered by the employer are financial, such as higher insurance and workers compensation premiums, ongoing audiology assessment and medical expenses, implementation of noise control methods and staff education and training.

Barriers encountered by Insurer

ONIHL is an ongoing condition, often with increasing disability therefore has ongoing assessment of client needs, ongoing medical, audiology and hearing equipment expenses (Carroll, 2003). A barrier for the insurer is often the establishment, implementation and ensuring the employee adheres to the return-to-work plan. The literature indicates that people with hearing impairment are often in denial of their level of hearing loss and do not want to be recognised as different (Timmons, 2010; Shield, 2006; Yorgenson et al 2007).

Further Research Opportunities

To gain a thorough understanding of the impacts of ONIHL on the key stakeholders in a workplace setting further research is imperative. Areas of particular need include the indirect costs of ONIHL, areas such as effects on productivity, staff absenteeism, increased risk of accidents and injury, and a decreased earning potential. There was also few studies specifically discussing the social implications of ONIHL, research tended to cite the effects of general hearing loss rather than the specific impact on sufferers of ONIHL.

Conclusions

ONHL is a growing problem, likely to be under-reported due to stigma associated with hearing loss and the age in which the condition presents. The effects of the condition are not restricted to the affected employee but have implications on family, social networks, employers, and insurers. In understanding ONHL and how it affects key stakeholders we have established possible barriers in an affected employee returning to work. The reviewing of literature also highlighted some knowledge deficits in ONHL, in which further research could promote a greater understanding of the disease process and impacts for the employee and employers, with a further goal of assisting those currently suffering the condition and effectively preventing future employees developing debilitating levels of hearing loss.

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Effects On The Worker, Family And Employer Following An Amputation Of The Leg Due To A Workplace Incident In Indonesia

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Abstract

A workplace incident that results in an amputation of the leg has lasting effects on the worker, the employer, and family. Much analysis of the trauma has occurred in western societies, however, little is known about the effects of limb (leg) amputation in Indonesia. This is largely due to the poor recognition and Indonesian government focus of occupational health and safety as a critical enabler to protecting workers in this emerging country. In Indonesia, religion has an impact on one's feelings after an incident and little by way of monetary support from Government institutions is available to assist family and workers through this difficult time. Even less emphasis on return to work programs prevails under law and the services available are limited. The value of family is the underlying feature of the injured workers' positive psychology. A case study of one worker involved in an industrial accident leg amputation is used to draw similarities and differences to western research.

Key Words

Jamsostek. Effects of amputation of the leg. Indonesian trauma accident. Industrial accident in a developing country.

Introduction

As a large archipelago covering some 17,508 islands with over 238 million people, Indonesia is a growing democracy whose main source of personal income remains from agriculture (Leighton, 2011). With the majority of the population being Muslim and 33 provinces each having power to pass its own laws (Leighton, 2011), there is one national State Owned Enterprise, Jamsostek, that covers injury compensation, management and rehabilitation for private sector workers. Jamsostek derives its power from *Employee Social Security Scheme (Jamsostek)*, Law No.3 year 1992. As contained in the 2009 Jamsostek Annual Report (2010, p.4), "as a social security provider for workers, PT Jamsostek (Persero) strives to become the trusted provider among stakeholders and the public."

However, for injured workers who have a leg amputation due to a workplace incident, Jamsostek and the employer legally provide very limited to no support to injury management, rehabilitation or economic needs of their injured worker. As no literary information can be found on the effects of a leg amputation on an Indonesian worker, by virtue of limitations under law to assist the worker, it becomes apparent that religion, the family and one's own will is crucial in leg amputee injured workers being able to return to work in any capacity whatsoever.

Research Methodology

A review of published literature relating to leg amputations was conducted using the following search engines:

www.google.com

<http://scholar.google.com/>
www.yahoo.com
www.anzwers.com.au
www.elsevierhealth.com
www.informahealthcare.com
www.findarticles.com

The key search words were "Indonesia workplace accident and leg amputation", "Indonesia occupational health and safety" and "Indonesian worker accident rehabilitation". Despite hundreds of thousands of documents being found under google and yahoo, a very small result showed up for answers. However, of all documents found, none related to Indonesian study outcomes of leg amputation patients, employer and family. Elsevierhealth.com could assist with journals once clicking the side bar selection, most of which were paid subscription based and non Indonesian. Informahealthcare.com also provided some non-Indonesian journal review opportunities, but again, most were subscription based. Findarticles.com helped discover the Journal of Rehabilitation which again was not Indonesian.

Further searches occurred using the website provided by Jamsostek, Australian Journal of Physiotherapy, American College of Occupational and Environmental Medicine, Safe Work Australia, The Asian Network for the Rights of Occupational Accident Victims, and National Centre for Biotechnology Information. Limited information was found however the law for Indonesia from Jamsostek was not available in English and was obtained from an Indonesian Industrial Relations colleague in Indonesia.

There was difficulty in accessing the Curtin University library collection of books as the literature review was drafted mainly on

mine sites, airports and 2 star hotels which have limited bandwidth capacity.

By virtue of the limited literary information available on an Indonesian worker, his family and his employer, one can turn to international research which has been mainly western in practice to assist determining whether there are likely to be comparable considerations given the difference in ethnic culture, social security and worker compensation rights and general socio-economics. To assist with the ethnic cultural dimension, a telephone interview occurred on 10 March 2011 with an employee (Iwan) from the writer's company who suffered a leg amputation in October 2010 as a result of a truck collision.

Effects of the Amputation on the Employee

A study looking at the depressive symptoms of a limb loss found 34.7% of patients who suffered a traumatic limb loss suffered depression (Darnall, Ephraim, Wegener, Dillingham, Pezzin, Rossbach, & MacKenzie, 2005). While the same study found patients experiencing phantom pain were 2.92 times more likely to suffer depressive symptoms, no research evidence can be found in Indonesia to validate this in a society with Islamic beliefs. While we could assume a similar ratio could apply in Indonesia, in times of pain, Indonesian Muslims will look to the Qur'an for guidance in life due to their belief that Allah will guide the way as he hears one's prayers (Dodge, 2003).

During the interview with Iwan, he confirmed he felt pain in the residual limb for several months. At the time of interview, he continues to feel chronic pain around the scar and lower part of the stump. To overcome this pain and maintain cognitive focus, he advised he accepts pain relief medication (as it is an accepted way of life for Islamic followers) and prayed to Allah for healing and good health with his wife and immediate family almost every hour.

Iwan understood the future changes he would have to make to his life on return to his home to accommodate his physical disability (Barrett and Browne, 2010). These changes were possible wheel chair access to his home, outpatient physical therapy / rehabilitation, and wearing a prosthetic leg. He also acknowledged to give him the best chance of any recovery, he needed to give his best effort and focus on the inpatient rehabilitation exercises he is currently going through. Yet he was unaware that he may suffer from future psychological reactions or the challenge of coping with a change in his job and that he may require occupational therapy as part of his rehabilitation and return to work. This personal view concurs with the research of Livneh, Antonak, & Gerhardt, 1999; Matsen, Malchow, & Matsen, 2000 (as cited in Wald and Alvaro (2004)) that psychological adjustment gradually occurs post injury for accident- caused amputation.

As Iwan was unsure what employment he may be suitable for, he felt he could do whatever he was asked to do and had a belief that he would return to his pre-injury position and a prosthesis will ensure there is no loss of function of the leg. His greatest emotional concern / anxiety suffered was being the bread winner for his wife, 2 children and parents. The grief of losing his leg has led to anxiety as he is an early 20's man with an education level to year 10 and his income earning capacity was what concerned him about his future quality of life rather than the

physical appearance/body image of the injury itself. No literature review can be found in Indonesia about the quality of life experienced by Indonesian trauma accident leg amputees or psychological stressors and anxiety suffered. Hence, the writer is unable to compare Indonesians experiences such as Iwan's to research findings like Wald and Alvaro (2004) that relate to psychological factors in work related amputations. Furthermore, while a random sample of one person is not sufficient empirical evidence to write a report on, and it is too early to confirm Iwan's longer term quality of life perception, what was consistent with Iwan and the study undertaken by Zidarov, Swaine and Gauthier-Gagnon (2009) was his body image and associated psycho social disturbances did not seem to be a factor in his perception of his future quality of life during his period of admission. The writer can only assume this reasoning is due to the fact the Qur'an places all equal and "no individual is superior to another" (Dodge, 2003, p.5) and next to god, family is the most important feature in a Muslim's way of life (Dodge, 2003, p.8). What is becoming apparent with Iwan, is he is beginning to show signs of anxiety which, according to Wald and Alvaro (2004), should be addressed in his rehabilitation.

Effects of the Injury on the Employee's Family

While no research can be identified online as to the stress or other trauma effects of a leg amputation on Indonesian families, Disability Online (2011) provides the following guidance for families:

- Be aware that this is an extremely stressful time for both the patient and the family.
- Be active in finding support and ways to cope with this stress.
- Make sure that there are plenty of opportunities for communication within the family.
- Ask the hospital staff what to expect during the recovery period.
- Realize that healing after a major trauma is a slow process and may take months.
- Keep a journal – this helps many patients; some like to take photographs.
- Hospital staff can help the patient and the family through this tough time.

In the Indonesian culture, family is vitally important. In this relationship, the concept of mutual assistance and consultation (Culture and Religion in Indonesia 2011) are critical. Combined with religious beliefs, Muslims have a strong sense of brotherhood (Dodge, 2003). As diversity and human equality are vital features in life (Dodge, 2003), Indonesian's look beyond physical appearances and look at the persons intrinsic worth. Irrespective of the financial strain placed on families to manage medical costs, with the strong family unit being the next most important belief after God, when a holistic view is taken regarding the effects on the family, Indonesian family support demonstrates overwhelming acceptance of who the person is rather than the physical disabilities they now live with. While the writer is unable to find any empirical evidence to back up this position, an assumption can be made that the western view of impact on families is similar to the Indonesian view yet the westerners need for social support groups (Barrett and Browne, 2010) or grouping patients together according to similar functional needs to foster group spirit (Longmuir, n.d.)

may not be the same for Indonesians.

Effects of the Injury on the Company and by Jamsostek

Where the incident itself involved other workers or the nature of the work relates to others performing the same task, counselling, debriefing and other psychological support should be considered to assist workers overcome their own physical and psychological hindrances incurred (Disability Online. 2011). While this may temporarily affect workplace productivity, such support should also help return a workplace back to normal productivity levels sooner. Whether or not such services are offered in Indonesian workplaces is subject to the employer. While the writer is aware larger foreign companies may have employee assistance program to support individual worker stressors, by virtue of Iwan Kusmawan from SPN (National Workers Union) comments earlier in this review, one could assume if productivity is placed first, it is likely the perception of productivity is to get work immediately started and forgo employee welfare/counselling programs.

Consistent with Millstein, Bain and Hunter (1985) study of 1000 Ontario amputees, as an industrial amputee, Iwan's recent preliminary vocational assessment deemed him suited to a more sedentary occupation rather than the truck serviceman role he performed in the mine pit. While Iwan works for a responsible employer where occupational health and safety and injured worker rehabilitation is accepted as the responsibility of the employer, the Jamsostek law allows companies to use legal rights which un-intentionally in the long run can influence whether an injured employee can return to work. Furthermore, the insurer (Jamsostek) is also financially restricted on the financial limit they can afford to pay an injured worker. Effects Jamsostek have on the Company and the worker by virtue of the *Employee Social Security Scheme (Jamsostek)*, Law No.3 year 1992 are:

1. In 2009, 96,314 workplace accidents occurred and a claim was made to Jamsostek (Jamsostek 2009 Annual Report, 2010, p.74). "Formal social insurance fund membership is concentrated mainly amongst employees of larger sector enterprises" (ILO Sub Regional Office for South East Asia, 2009). Hence, many workers are not covered for Jamsostek social security which prevents them from accessing entitlements due under law as a result of a workplace accident. Interestingly, this view was backed up at the 2010 Asian Network for Human Rights and Occupational Accident Victims conference in Bandung, Indonesia. Kusmuwan (2010) from SPN (National Workers Union) noted at the conference:

"There are approximately 3000 factories in Indonesia. However, there are insufficient supervisors to monitor these. Less than half of companies regularly report occupational accidents, which makes available figures unreliable. Even less is known about occupational diseases. It is clear that workers are prioritized second to financial considerations. Investment data is considered more important to collect than that on labour conditions.

Around 70 million workers are engaged with the informal sector. These workers are not recognized, they receive no protections, and are frequently exploited. Only 30% of formal workers have joined Jamsostek (worker social insurance membership). The

state of OSH conditions for women workers is in a particularly poor state. Overall, this lack of OSH protection for so much of the workforce amounts to a situation in which workers are effectively 'selling their bodies' for wages."

2. Under Indonesian Jamsostek Law at Chapter IV, there is no strict requirement for an employer to provide rehabilitation efforts as this is covered by Jamsostek as one of its services. Likewise in Chapter IV, the employer is not obliged to pay the employee an income as Jamsostek covers up to one year of basic income albeit on a reducing scale.

3. An employer is allowed to "opt out" of Jamsostek coverage for employment injury if they elect to take on a private health insurance scheme (ILO Subregional office for South East Asia, 2009, p.4). This means the employer can forgo the Jamsostek premium and provide better health care benefits as an overall package and this could reduce the current government level of rehabilitation services in favor of other more immediate lifestyle benefits such as improved dental and optical. A public system consequence of this opt out provision ensures reduced capacity and funding available for injury management services across the archipelago.

4. The insurer, Jamsostek, has 121 branches (Jamsostek 2009 Annual Report, 2010, p14) across Indonesia. Under Chapter IV of the Jamsostek Law, given claim costs of transport for an injured worker are limited to Land Rp 400.000, Sea Rp 750.000, Air Rp 1.500.000, with the vast number of islands and limited office numbers, claims and other associated administration for an injury pose geographical challenges for some injured workers (or employer on behalf of the worker) to make a claim and access benefits. Furthermore, under Chapter IV, medical expense claims are capped at Rupiah 12 million (approximately US\$1300.00). Hence, unless a company is willing to pay the difference or has a more generous private health hospital benefit package, the family is largely left to pick up the medical claim excess.

5. By virtue of the minimum wage for Jakarta being Rp1,290,000 (Human Resources Community, 2011), given Jamsostek's financial limitations and cost coverage, often a leg amputee worker cannot afford to seek rehabilitation or vocational training assistance let alone a prosthesis. Hence, in the absence of measurable data, we could assume a return to work in the pre-injury position may not occur. Alternatively, any injury compensation paid by Jamsostek for the disability may be used by the family to cover ongoing medical costs. Unfortunately, and despite the finding by Millstein, Bain and Hunter (1985) that the amputee's own attitude had the largest impact on job placement, while no comparative study can be found on Indonesian workers, one could assume financial capacity to obtain appropriate assistance with medical, prosthesis and rehabilitation costs will have a greater level of influence.

The legal obligations on the employer may be weak to facilitate return to work, however, research from Wald and Alvaro (2004) suggests a structured and individually tailored return to work plan by the rehabilitation team, employer, and worker is essential. They cite the plan should address both physical and psycho social issues. There are no barriers preventing an Indonesian employer accepting this as a responsibility under their

OHS policy and procedure. Where required, vocational rehabilitation (Wald and Alvo, 2004) should also be incorporated. Longmuir (n.d.), in his article "Principles and Techniques in Rehabilitation" provides a solid outline of what a treatment plan should include and could be a useful summary guide for employers in Indonesia to embrace or ensure Jamsostek cover for the amputee. Likewise, Kenny (1998) provides useful contents for a occupational rehabilitation program. Notwithstanding this need for employers to accept greater responsibility in the rehabilitation process, further legislative reform is required in Indonesia to ensure rehabilitation of employees with a work related injury or ill health occurs as Jamsostek, according to Sijabat (Jakarta Post, 30/11/2010), is coming under fire to reform its injury and accident management focus and play a more strategic role. Should such occur, we may see greater expectations placed on employers which would affect the way they respond to injury management.

In the Indonesian landscape, the interaction between various stakeholders is not optimally aligned and the Macro System conceptual model constructed by Friesen, Yassi and Cooper (2000) cannot be implemented without rigorous legal reform and financial stability being a cornerstone of the system thereby empowering injured workers to have a say with their employer and Jamsostek on their return to work desires. What is disappointing with the Indonesian Jamsostek system and the employer opt out opportunity, is the system shifts from a safety management focus to a healthcare focus and despite the micro system level of the worker having the will and positive attitude to overcome their trauma and return to a normal life, the system breaks down at the meso system level as rehabilitation efforts are not a primary focus of injury management due to a health care system taking over the return to work feature of a safety management system. To ascertain return to work being seriously regarded, one just needs to review the website of Indonesia's leading safety directory (<http://indosafetydirectory.com>) where it is evident no training is offered nor topics mentioned on return to work/rehabilitation/injury management or dealing with employees affected by trauma accidents.

Conclusion

The effects of amputation trauma are well documented in western societies. In emerging Indonesia, little research can be found on the effects to workers, family, and the company. Legal frameworks contained in Jamsostek Law are not as contemporary as western societies (e.g. the Western Australian *Workers' Compensation and Injury Management Act 1981*) which force better communication and consultation amongst stakeholders. By virtue of Islamic religious beliefs influencing a way of life, Allah is believed to have a say on the future of one's life and this is more readily accepted than perhaps in western societies where rehabilitation thinking, effort and practice is more advance.

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Dr. V. Harry Adrounie, 1915-2010: A Lifetime of Public Health Service

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Abstract

Dr. V. Harry Adrounie was born April 15, 1915, Battle Creek, United States of America (USA). He served in the U. S. Army and U.S. Air Force from 1941-1968, retiring with the rank of Lieutenant Colonel and then served in a variety of Government, University and other roles until his passing on February 9, 2010, in Hastings, MI, USA. He forged the discipline of sanitation later environmental health in the USA and had a major academic and professional impact on public health internationally, especially in Southeast Asia. He was President of the National Environmental Health Association (N.E.H.A.), USA, 1961-62 and served on the World Safety Organizations' (WSO) Board of Directors for many years. He was awarded the Walter S. Mangold Award in 1963 from the N.E.H.A. and WSO World Safety Person of the Year in 1993.

Introduction

Lieutenant Colonel (Ret'd) Dr. V. Harry Adrounie passed away suddenly on Tuesday, February 9, 2010, at his home in Hastings at the age of 94 after a lifetime of public service to environmental health at local, national and international level. He developed, implemented and managed environmental health programs on a

world-wide basis and developed and operated clinical laboratories for large hospitals and medical services. His career accomplishments are manifold and inspiring, just some of which have been listed in Table 1. He was regarded as an international authority on environmental and public health.

Early life, studies and career

Dr V. Harry Adrounie was born on April 29, 1915 in Battle Creek, to Dr. Haroutune and Dorothy (Kalaidjian) Adrounie. When Harry was eight months old, his family moved to Lacy and then again moved to Hastings in 1922. He graduated from Hastings High School in 1931. He received his Bachelor of Science (in 1940) and Bachelor of Arts (in 1959) degrees from St. Ambrose University in Davenport, IA, U.S.A. He then earned his Master of Science/Doctor of Philosophy (Ph.D.) in Environmental Health and Ph.D. in Community Health at Western States University for Professional Studies, Missouri, U.S.A. He was certified with the American Board of Industrial Hygiene and a registered Sanitarian in Michigan, California, Pennsylvania and North Carolina. At least two papers retrieved on PubMed indicate the breadth of his knowledge on public health, even early in his career (Adrounie, 1954; 1958).

Table 1. A Selection of Dr. V. Harry Adrounie's Accomplishments*[#]

- President of National Environmental Health Association (N.E.H.A.), 1961–62.
- Walter S. Mangold Award, 1963, N.E.H.A (E.H.O.P.A.C., 2010).
- Founder Diplomate and Diplomate Emeritus of the American Academy of Sanitarians (AAS).
- Twenty-seven years service in the United States (U.S.) Army (1941–49) and United States Air Force (U.S.A.F.) (1949–68) retiring with the rank of Lieutenant Colonel.
- More than 65 years teaching environmental and public health in the U.S.A.F. and universities in several countries, including U.S.A., the Middle East and South America.
- Developed, implemented, and managed environmental health programs on a world-wide basis and developed and operated clinical laboratories for large hospitals and medical services.
- World Safety Person of the Year 1993, World Safety Organization (Anonymous, 1993).
- American Public Health Association Environmental Alliance for Senior Involvement Award 2003.
- The V. Harry Adrounie Laboratory Data Quality Assurance Act named in his honor by the State of Michigan on July 24, 2004.
- Spearheaded the development of a curriculum kit to educate school-age children on a variety of health-related topics while serving as chairman of a national children's health committee.

[*Adapted from Michael (2010)]

[#]The Mangold Award recognizes outstanding contributions to the preservation of the environment by the environmental health professional.)

Dr. V. Harry Adrounie enlisted in the U.S. Army in 1941, but transferred into the U.S.A.F. in 1949, where he remained until his retirement in 1968 advancing to the rank of Lieutenant Colonel. He was Technical Director of ARA Environmental Services 1968–1970; Director of Environmental Health Division in Chester County Health Department, 1970–1975; Director of the Berrien County Health Department 1975–1978; Professor of Environmental Health, School of Public Health, University of Hawaii, Manoa, 1978–1980; Professor of Environmental Health, American University, Beirut, Lebanon, and the American

University, Armenia; and Dean and Professor at the School of Public Health, Western States University for Professional Studies, 1980–1983.

Achievements

Dr. V. Harry Adrounie has held various offices for various groups including: U.S. Representative for the U.S. Interdepartmental Commission on Nutrition 1959–1961; member of the Environmental Issues Commission, Bush for President Campaign in 1988; co-chairman Barry County Bush for President Campaign; former Chairman of the Barry County Solid Waste Planning Commission; former Vice-Chairman Hasting City Planning Commission; co-founder of Science Advice and Policy Board, Michigan Ground Water Survey Inc.; Chairman of Advisory Council South Central Michigan Commission on Aging; past adult leader for the Boy Scouts; named Alumnus of the Year for Hastings High School in 1961; Life Member of the Veterans of Foreign Wars; founder and Life Member of Michigan Association Local Environmental Health Administrators; former President 1961–1962 and Life Member of National Environmental Health Association (NEHA); Founder Diplomat and Diplomat Emeritus of the American Academy of Sanitarians (AAS); Vice President, National Academy of Sanitarians, 1958 (Anonymous, 1958); a Diplomat with American Academy of Industrial Hygiene; Life Member of the Association of Military Surgeons of the United States; a Charter Member of the International Public Health Society; Life Member and certified rifle marksmanship instructor for the National Rifle Association; former President of the Michigan Environmental Health Association; U.S. Air Force Association; former Commander of the American Legion; co-founder of the Indonesian Environmental Health Association; Life Member of the Elks and Moose; and former President of Kiwanis. He also received an award for 10 years of service and contributions to Underwriters Laboratories Inc., an independent, nonprofit product-safety testing and certification organization. He had served for a decade on the Underwriters Laboratories' Environmental and Public Health Council. Within the World Safety Organization (W.S.O.), he was a member of the Board of Directors, the Certification Board and the Editorial Board at various times during the late 1980s and 1990s, as well as being a regular at W.S.O. conferences during that period (Anonymous, 1993). He would often drive to W.S.O. conferences in his latest Lincoln Town Car.

Family

Dr. V. Harry Adrounie is survived by his wife, Agnes; sons, H. Michael ©. Dolores) Adrounie of Ypsilanti, V. Patrick (Debra) Adrounie of Fairfax Station, VA; grandchildren, Ryan, Kate, Tom and David; great grandchildren, Conrad and Valentin; several nieces and nephews. He was proceeded in death by his parents Haroutune and Dorothy (Kalaidjian) Adrounie; and sister, Zabelle. A celebration of his life was held at Wren Chapel by Lauer Family Funeral Homes on Saturday, February 27, 2010, in Hastings. Interment with full Military Honors took place on Thursday April 1, 2010, at Arlington National Cemetery in Washington, DC.

Conclusion

His life of public health service is well summed up by Rear Admiral (Ret'd) Dr. Jerrold M. Michael (2010: p 47), formerly

of the U.S. Public Health Service, who indicated that Harry was less focused on career destination, but on the journey and the goodness of the people he met along the way:

"He stood ready to assist in any worthy project and astute at passing the credit for accomplishments to others on his team."

He was also generous in his assistance of young professionals and students; a comment echoed by the current President of NEHA (Roberts, 2010). A quote remembered by one of his colleagues, Elaine Gilbert (2004):

"Whatever you're doing, if it's worthwhile, you should never give up".

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WSO Code of Ethics

Members of the WSO, by virtue of their acceptance of membership into the WSO, are bound to the following Code of Ethics regarding their activities associated with the WSO:

1.Members must be responsible for ethical and professional conduct in relationships with clients, employers, associates and public.

2.Members must be responsible for professional competence in performance of all their professional activities.

3.Members must be responsible for the protection of professional interest, reputation and good name of any deserving WSO member or member of other professional organization involved in safety or associated disciplines.

4.Members must be dedicated to professional development of new members in the safety profession and associated disciplines.

5.Members must be responsible for their complete sincerity in professional services in the world.

6.Members must be responsible for continuing improvement and development of professional competencies in safety and associated disciplines.

7.Members must be responsible for their professional efforts to support the WSO motto "Making Safety A Way Of Life...Worldwide".

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