Early retirement: does cause of invalidity influence rate of social security benefit processing in Zimbabwe?

C. F. Chinamasa, R. F. Heller and P. McEllduff

Background
The social security invalidity benefit programme in Zimbabwe is organized through a network of regional offices. There are no standard guidelines for assessing invalidity.

Aim
We tested whether cause of invalidity and place of residence influenced the rate of processing of invalidity benefit claims.

Method
We carried out a retrospective cohort study involving 523 medically unadjudicated and a 25% (354/1431) random sample of medically adjudicated invalidity benefit claims at the Central Benefits Office of the National Social Security Authority in Zimbabwe. The outcome for the study was time from certification of invalidity to conclusion of medical adjudication of invalidity benefit claims.

Results
Compared with tuberculosis, HIV disease increased the rate of progress to final medical adjudication 2.6-fold, musculoskeletal diseases 1.9-fold, physical injuries 1.7-fold and chronic diseases 1.8-fold after adjusting for place of residence, industrial sector, gender and age. Compared with residing in Harare, residing in Chinhoyi, Gweru, Masvingo and Mutare regions reduced the rate of progress to final medical adjudication by 62, 69, 51 and 56%, respectively, after adjusting for cause of invalidity, industrial sector, gender and age. Compared with invalidity benefit claims from the services sector, those from the mining sector experienced a 45% reduction in rate of progress to final medical adjudication after adjusting for cause of invalidity, place of residence, gender and age.

Conclusion
Cause of invalidity, place of residence and industrial sector had significant influences on the rate of progress to final medical adjudication of invalidity benefit claims.

Key words
Cause of invalidity; invalidity benefit claims; medical adjudication; rate of processing; social security; Zimbabwe.

Introduction
The National Social Security Authority (NSSA) administers the National Pension and other benefits scheme in Zimbabwe [1]. This statutory scheme was introduced in 1994 and deals with, among other things, the Invalidity Benefits (IB) programme. Under this programme, insured workers who are forced to retire because of ill health before reaching the national retirement age of 60 years can apply for social security benefits. The IB programme operates through a Central Benefits Office (CBO) in Harare and a regionalized network of social security offices situated in Harare, Bulawayo, Chinhoyi, Gweru, Masvingo and Mutare. Figure 1 shows the location of regional social security offices in Zimbabwe [2].

University of Manchester, School of Epidemiology and Health Sciences, Evidence for Population Health Unit, Manchester, UK.
Correspondence to: Dr Camillo F. Chinamasa, University of Manchester, School of Epidemiology and Health Sciences, Evidence for Population Health Unit, Stopford Building, Oxford Road, Manchester M13 9PT, UK. E-mail: camillo.f.chinamasa@man.ac.uk

Occupational Medicine, Vol. 54 No. 1
© Society of Occupational Medicine 2004; all rights reserved
Processing of invalidity benefit claims involves several stages. Two of these, certification of invalidity by personal medical doctors and medical adjudication by NSSA medical advisors at the CBO are important to public health. Both operate without standard guidelines for assessing invalidity. Furthermore, medical adjudication relies heavily on sufficiently good quality information on cause of invalidity and fast turnaround time for claimants invited for medical examination.

Although there are no published statistics on industrial injuries and diseases in Zimbabwe, it is known that the HIV/AIDS epidemic has had a significant effect on the morbidity pattern in Zimbabwe with projections that ~25% of the general and 15–20% of the working populations may be infected with HIV [3,4]. The prevalence of tuberculosis has also been increasing in Zimbabwe with reports of estimates of nearly 70%, which appear to be linked to the HIV/AIDS epidemic [5–7]. Further evidence from studies carried out in Zimbabwe also suggests that 60–85% of people diagnosed with tuberculosis have underlying HIV infection, while 40% of HIV positive patients who underwent bronchoscopy had tuberculosis [8–10]. Pozniak et al. [11] found a significant association between age (15–42 years) and HIV seropositivity. All this evidence would suggest that HIV/AIDS and tuberculosis are likely to place a significant burden on the invalidity benefit programme.

Nearly 70% of Zimbabwe’s population lives in rural areas. Most retirees migrate to rural areas soon after retirement because they cannot afford the higher costs of urban life. This is likely to affect their ability to follow up their invalidity benefit claims with NSSA.

It was interesting, therefore, to explore the potential impact of high morbidity, absence of guidelines and geographical dispersion on the nascent IB programme.

The hypothesis for this study was that cause of invalidity had an influence on time to final medical adjudication of invalidity benefit claims. We also tested whether geographical location of claimants’ residence influenced the time to final medical adjudication of invalidity benefit claims at NSSA.

Methods

We identified all claim files that were submitted to the CBO between 1 January 1995 and 10 March 1998, using the register of alphanumeric claim file numbers for invalidity benefit claims. We then separated claims that had been fully adjudicated by NSSA medical advisors (n = 1431) from those that had not (n = 523). All 523 invalidity benefit claim files that had not been fully adjudicated were recruited into the study. Using a copy of the register of invalidity benefit claim file numbers, we generated a 25% (354/1431) simple random sample of claim files that had been fully adjudicated and included them in the study.

The outcome measure for the study was the time to final medical adjudication of an invalidity benefit claim, in complete calendar months. This comprised the interval from date of issuing of a medical certificate by a claimant’s doctor to the date of final adjudication by the NSSA medical advisors. Both dates are routinely documented on P11 forms and (NSSA medical advisor) medical report forms. Where medical adjudication had not taken place, the latter date was not available and the claims were censored with respect to the event.

Three trained assistants extracted data from claim files and recorded these on proforma data sheets designed for the study. Raw data comprised name of claimant, date of birth, diagnoses, date of ill health certification, current occupation, name of current employer, claimant’s contact address and date of final medical adjudication. A random sample of data sheets was checked for accuracy and quality during the data collection exercise. All claimants’ names were replaced with number identities before entering the raw data on computer for analysis. Cause of invalidity and place of residence were each grouped into seven categories.

The quality of information on claimants’ occupations was poor. More than 60% of study subjects had no data on occupation. For those with available information, it was difficult to discern meaningful categories for further use in the study. We classed employers into five broad groups.
We grouped claimants’ ages into four categories, while gender was derived from claimants’ first names.

**Statistical analysis**

We carried out statistical analyses using the SPSS software package [12]. We calculated $\chi^2$ tests, P-values (two-sided) in preliminary analyses to test whether there was any association between whether invalidity benefit claims had been processed or not and the study factors. Processed claims were all claims that had been fully adjudicated, while unprocessed ones had not. We carried out similar analyses to test for potential confounding on the main study variable, cause of invalidity by other study factors.

We explored the distribution of the time to final medical adjudication using the Kaplan–Meier method for the whole data set.

Finally, we calculated rate ratios, 95% confidence intervals (CI) and P-values using the proportional hazards model to test for association between time to processing of invalidity benefit claims and the two study variables: cause of invalidity and place of residence, having adjusted for potential confounding by industrial sector, age and gender.

Data on 98% (862/877) of the invalidity benefit claims in the study were entered into the survival and proportional hazards model analyses. Nearly 60% (517/862) of these were censored with respect to the outcome event: time to final medical adjudication. Less than 2% of claims (15/877) had missing data and they were dropped from both survival and the proportional hazards model analyses.

For this study, given a maximum follow up period of 36 months, to detect a rate ratio of 2.00 for two comparison groups, at a significance level of $P < 0.05$, with 90% power and median time to final medical adjudication of 13 months required 100 subjects in each comparison group.

**Results**

**Univariate analysis**

Results of the univariate analyses showed that there was a statistically significant association between invalidity benefit claim processing and cause of invalidity ($\chi^2 = 37.7$, df = 6, $P < 0.001$), place of residence ($\chi^2 = 125.6$, df = 6, $P < 0.001$), industrial sector ($\chi^2 = 61.7$, df = 4, $P < 0.001$) and gender ($\chi^2 = 5.7$, df = 1, $P = 0.017$). The results also showed that there was no statistically significant association between invalidity benefit claim processing and age ($\chi^2 = 1.6$, df = 3, $P = 0.7$).

There were more unprocessed than processed claims related to tuberculosis, other health conditions, musculoskeletal and cardio-respiratory diseases. There were, however, more processed than unprocessed claims related to HIV disease.

There were more unprocessed than processed claims from the Chinhoyi, Gweru, Masvingo, peri-Harare and Mutare regions. There were, however, more processed than unprocessed claims from Harare region.

There were more unprocessed than processed claims from the agriculture and mining sectors. There were, however, more processed than unprocessed claims from the light-manufacturing sector.

Finally, there were more unprocessed than processed claims for males; the converse was true for females.

**Time to final medical adjudication**

The Kaplan–Meier plot in Figure 2 shows that the median time to final medical adjudication for invalidity benefit claims was 13 months (SE = 1, 95% CI = 11–15). The plot also shows that at 3, 6 and 24 months, 80, 68 and 34% of the invalidity benefit claims were still awaiting final medical adjudication, respectively.

**Proportional hazards model analysis**

Results of proportional hazards model analysis in Table 1 show that cause of invalidity ($P < 0.001$), regional address ($P < 0.001$) and industrial sector ($P = 0.002$) had a statistically significant influence on time to final medical adjudication of invalidity benefit claims after adjusting for age and gender.

Among the specific causes of invalidity, HIV disease ($P < 0.001$), musculoskeletal disease ($P = 0.005$), physical injury ($P = 0.040$) and chronic diseases ($P = 0.009$) had a statistically significant influence on time

![Survival Function](https://academic.oup.com/occmed/article-abstract/54/1/47/1369022/541471369022)

**Figure 2.** Kaplan–Meier plot of the cumulative probability of medical adjudication against the time to final medical adjudication for invalidity benefit claims.
Table 1. Results of the proportional hazard model analysis for the influence of cause of invalidity and place of residence on time to final medical adjudication of invalidity benefit claim after adjustment for industry sector, age and gender

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>Rate ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause of invalidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>1.000</td>
<td>Reference</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Other conditions</td>
<td>1.421</td>
<td>0.867–2.327</td>
<td>0.163</td>
</tr>
<tr>
<td>HIV disease</td>
<td>2.621</td>
<td>1.682–4.084</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>1.889</td>
<td>1.212–2.944</td>
<td>0.005</td>
</tr>
<tr>
<td>Physical injuries</td>
<td>1.707</td>
<td>1.024–2.845</td>
<td>0.040</td>
</tr>
<tr>
<td>Chronic diseases</td>
<td>1.851</td>
<td>1.162–2.946</td>
<td>0.009</td>
</tr>
<tr>
<td>Cardio-respiratory</td>
<td>1.184</td>
<td>0.750–1.872</td>
<td>0.468</td>
</tr>
<tr>
<td>Place of residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harare</td>
<td>1.00</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Bulawayo</td>
<td>1.088</td>
<td>0.622–1.904</td>
<td>0.768</td>
</tr>
<tr>
<td>Chinshooyi</td>
<td>0.378</td>
<td>0.216–0.661</td>
<td>0.001</td>
</tr>
<tr>
<td>Gweru</td>
<td>0.314</td>
<td>0.202–0.487</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Masvingo</td>
<td>0.487</td>
<td>0.318–0.746</td>
<td>0.001</td>
</tr>
<tr>
<td>Mutare</td>
<td>0.444</td>
<td>0.252–0.785</td>
<td>0.005</td>
</tr>
<tr>
<td>Peri-Harare</td>
<td>0.772</td>
<td>0.528–1.129</td>
<td>0.183</td>
</tr>
<tr>
<td>Industrial sector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>1.000</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.822</td>
<td>0.560–1.206</td>
<td>0.315</td>
</tr>
<tr>
<td>Mining</td>
<td>0.515</td>
<td>0.349–0.759</td>
<td>0.001</td>
</tr>
<tr>
<td>Light manufacturing</td>
<td>1.051</td>
<td>0.765–1.442</td>
<td>0.760</td>
</tr>
<tr>
<td>Heavy manufacturing</td>
<td>1.087</td>
<td>0.793–1.490</td>
<td>0.604</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;35 years</td>
<td>1.000</td>
<td>Reference</td>
<td>0.645</td>
</tr>
<tr>
<td>35–44 years</td>
<td>1.097</td>
<td>0.808–1.488</td>
<td>0.553</td>
</tr>
<tr>
<td>45–54 years</td>
<td>0.992</td>
<td>0.724–1.359</td>
<td>0.960</td>
</tr>
<tr>
<td>55 years</td>
<td>1.181</td>
<td>0.863–1.617</td>
<td>0.298</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.000</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.137</td>
<td>0.764–1.692</td>
<td>0.525</td>
</tr>
</tbody>
</table>

Discussion

Results from proportional hazards model analysis confirmed that cause of invalidity, place of residence and industrial sector were significant independent determinants of time to final medical adjudication of invalidity benefit claims after adjustment for age and gender.

Compared with claims related to tuberculosis, those claims that tended to bear more information on severity of disease experienced significantly increased progress through the adjudication process.

Compared with claims from Harare, claims from regions further away from the CBO experienced a significant decrease in progress through the adjudication process, perhaps due to delays in submission of claims from the respective regions or delays in claimants responding to invitations for physical examinations at the CBO. Either cause indicates serious problems in the way the invalidity benefit system operates.

We are aware that the mining sector was downsizing its labour force during the second half of the 1990s at a time the NSSA was operating without a clear policy on how to handle invalidity benefit claims due to occupational diseases such as pneumoconiosis. We suspect that this absence of a clear policy on dual entitlements contributed to the slower progress of claims from the mining sector.

While results from this study clearly showed that the invalidity benefit system was taking longer than the statutory target of 6 weeks to process lodged claims, it is, however, not obvious from these results which stage in the system was contributing the most to the delays.

This study had some limitations, which could influence the results. First, we did not measure the time intervals for each of the stages in the processing of invalidity benefit claims and, hence, are unable to pinpoint the stages in the process which were responsible for delays. Secondly, we could not use data on claimants’ occupation in analysis to explore potential influence of socio-economic factors, because recorded information on occupation was of poor quality. We could have used information on wages to measure socio-economic status instead. Thirdly, in grouping raw data in categories we might have attenuated the influence of the study factors on the outcome.

A number of implications arise from this study. First, these results strongly suggest that there is a need to standardize the way medical evidence for invalidity is collected. We suggest that the NSSA develops standard guidelines for assessing workers for ill health retirement, similar to those in programmes elsewhere [13–16]. These guidelines should then be disseminated widely among medical practitioners. This will give doctors clearer guidance on differentiating between applicants with chronic but stabilized health conditions and those with deteriorating health. Doctors can then advise applicants more consistently and provide more relevant information to speed up adjudication. Standard guidelines will also help make adjudication more objective, consistent, fair and efficient.

Secondly, the results clearly demonstrated the need to make the medical adjudication process more accessible to
non-Harare applicants, perhaps through an outreach programme or local arrangements at regional offices.

Finally, this study showed that there is scope for systematic research into socio-economic, health and organizational issues related to social security. Such research can generate evidence for informing the management of social security programmes.

Conclusions
This study clearly showed that cause of invalidity, place of residence and industrial sector had significant influence on the rate of progress of invalidity benefit claims processing at the NSSA in Zimbabwe.

The influence of these factors was affecting the fair, efficient and effective provision of social security services. Several strategies could be adopted to ameliorate the influence of these factors.

Acknowledgements
Dr Camillo F. Chinamasa carried out this project in part fulfilment of the requirements for the Master in Health Sciences degree at the University of Manchester. Professor Nicola Cherry and Dr Selwyn St Leger supervised the design and data collection stages of the project. Professor Richard F. Heller supervised the writing up of the thesis and edited the drafts for this paper. Dr Patrick McEllduff advised on data analysis and edited drafts for this paper. Mrs Angelberta Madzingira, the Industrial Relations and Training Manager at the National Social Security Authority in Zimbabwe, granted permission to access and use data from the Central Benefits Office.

References