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Housing and health in an informal settlement upgrade in Cape Town, South Africa

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Housing and health in an informal settlement upgrade in Cape Town, South Africa.

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Abstract

Taking a socio-ecological perspective the World Health Organisation (WHO) recognizes that housing comprises four interrelated dimensions – the physical structure of the house, the home, the neighbourhood infrastructure and the community. Housing related health vulnerability arises when residents are exposed to poor conditions in any one of these dimensions and augmented when two or more co-exist. Regardless, the relationship between housing and health in the global south remains largely under explored; in particular there has been little focus on health outcomes resulting from upgrading of informal settlements. Applying this framework we report from an in-situ upgrading of the informal settlement of Imizamo Yethu in Cape Town, South Africa. Data gathered from surveys are used to determine whether differences in each of these dimensions exist between housing type; both formal upgrades and shacks. Results show that whilst no significant differences exist in self-reported physical health, residents of formal housing are less likely to report mental health issues, have a stronger sense of belonging and report greater satisfaction with both neighbourhood and home than shack residents. However, these contested spaces are not easily interpreted and community tension, exclusion and disadvantage highlight the complex interactions between each of the interrelated dimensions and policies regarding housing intervention. The paper highlights the complex relationship between housing and health that is often lost in simplistic measures of housing when outcomes related to the indoor environment alone are considered.

Key words: informal settlement, housing and health, housing upgrade, South Africa, township

Introduction

Informal settlement dwellers suffer a disproportionate burden of ill-health. Evidence from the global south highlights links between aspects of the home environment and respiratory diseases (Kyobutungi et al., 2008), diarrhoeal diseases (Haque et al., 2003), mental health (Arku et al., 2011), waterborne diseases (Ali, 2010), domestic accidents (Gosselin et al., 2009) and the spread of communicable diseases (Butala et al., 2010). Poor housing, overcrowding, indoor air pollution, lack of sanitation and infrastructure coupled with poverty and vulnerability reinforce poor physical and mental health and contribute to a ‘double burden’ of enhanced vulnerability to disease, further entrenching socio-economic and health inequalities (Sverdlik, 2011). Moving beyond this concern with dwellings’ internal health implications, the World Health Organisation’s (WHO) holistic approach to housing expands these concerns and identifies four interrelated dimensions – the house, the home, the neighbourhood and the community – as contributing to health and wellbeing (Table 1). This classification, developed in a European context, recognises that each of these dimensions has the ability to impact upon health and well-being. In this paper we extend this classification to informal settlements to provide a framework through which to assess the impact on health of a housing upgrade to emphasise the need for a holistic approach to housing improvement.

Table 1: WHO Interrelated Dimensions of Housing

Dimension	Description
The house	Physical characteristics of the dwelling
The home	Psychosocial, economic and cultural construction created by the household
The neighbourhood infrastructure	Physical conditions of the immediate housing environment
The community	Social environment and the population and services within the neighbourhood

Adapted from the WHO (2011)

Rapid urbanisation across the global south has resulted in a proliferation of informal urban settlements, lacking in planning oversight or basic infrastructure and service delivery mechanisms (Huchzermeyer, 2009; Huchzermeyer and Karam 2006). Responses to these developments from multilateral institutions have been couched in the language of ‘eradication’ of slums, with implications for housing policy implementation to ignore the social networks and needs of residents (Huchzermeyer, 2010). The scale and spread of informal settlements has, however, pressured governments towards ‘in situ upgrades’ of physical infrastructure, housing units and service connections and greater social and economic integration of informal settlements (Abbott, 2001; van Horen, 2000). These endeavours also recognise informal settlements as ‘homes’ rather than ‘slums’ within a broader discursive shift from the ‘myths of marginality’ towards acknowledgement of the multiple and diverse agency of residents and (in)formal activities (Angotti, 2006), as witnessed in South Africa’s shifting housing policy landscape.

South Africa is one of Africa’s most urbanised countries, with historical settlement and migration patterns producing a profoundly inequitable and distorted urban landscape (see Christopher, 2005; Turok, 2001). Apartheid spatial planning and neglect of black urban residential areas, followed by rapid urbanisation at the end of the apartheid period has exceeded government’s ability to provide housing and infrastructure. Informal settlements, usually located on the periphery of major urban centres and characterised by substandard

housing, poor infrastructure, severe poverty, multiple health and social challenges have expanded (see Beall et al., 2000; Western 2001).

Government housing policies, including the *Comprehensive Housing Plan*, have utilised self-help approaches to housing development and government subsidies to provide low-cost housing (Goebel, 2007; Huchzermeyer, 2001; Oldfield, 2000).¹ These policies are located within a paradigm shift towards holistic social change wherein informal settlements are recognised as “a manifestation of structural social change, the resolution of which requires a multi-sectoral partnership, long-term commitment and political endurance” with emphasis on sustainability and economic development (Department of Housing, 2005, p.4-5; also Boraine et al., 2006; Goebel, 2007; Lemanski, 2007). This progressive engagement resonates with calls for development policy to deliver on environmental and social justice concerns (cf. Dixon & Ramutsindela, 2006; Napier, 2003).

South African housing policy, however, combines *indirect* rhetoric addressing the causes of informal settlement formation and entrenched inequality with the *direct* approach of informal settlement ‘eradication’ (Huchzermeyer, 2009; 2010). These tensions are layered onto broader urban planning efforts to ensure competitiveness in the global economy and to deliver pro-poor agendas but which re-inscribe social and spatial inequality and segregation amidst failures to develop holistic development frameworks incorporating spaces for business, transport and recreation (Aboott, 2001; Lemanski 2007; Robinson, 2006; Skuse & Cousins, 2007).

The Western Cape province is highly urbanised (88.5%, compared with 57.0% national average (SAIRR, 2009, p. 35)) with Cape Town the primary urban hub. Cape Town’s spatial geography reflects the legacies of apartheid planning, with a low black population resulting from historical restrictions on black in-migration. Recent rapid population growth, driven by in-migration from the Eastern Cape, has disproportionately affected informal settlements, exceeding local and municipal government’s ability to deliver housing and other basic services (Skuse & Cousins, 2007; Western, 2001)

This paper addresses the outcomes of an in-situ upgrade programme in the Imizamo Yethu (IY) township, located in the coastal residential suburb of Hout Bay (figure 1). This research is located within broader engagements with shifting national policy frameworks and increasing recognition of the need for holistic, integrated urban planning in South Africa. Designed as a pilot study for a series of longitudinal investigations into outcomes of settlement upgrading programmes, this project set out to explore the health and social well-being outcomes of an in-situ informal upgrade project, encompassing self-reported changes in quality of life, physical and mental health and effects on community relations and belonging. This paper reports on both formal and informal housing residents’ perceptions of changes in health in relation to the four spheres of the WHO’s holistic approach to housing and health.

Hout Bay comprises three main sections: a working-class coloured community around the harbour and Sentinel, the wealthy, predominantly white residents in the valley and on the mountain slopes, and the primarily black township of IY. Established in 1991 as a 34 hectare site-and-service settlement IY was zoned to accommodate 455 dwellings on 18 hectares of

¹ For a more comprehensive summary of housing policy development than offered here, see Huchzermeyer (2009, p. 64-5),

land (Harte et al., 2008, p. 145; Oelofse & Dodson, 1997). By 2001, IY housed 8,063 residents, the majority of whom were black African (95%) with limited educational qualifications (only 2% with a Martic certificate or higher), a high unemployment rate (46%) and low household annual income (73% households with an income less than R19,200 per annum (£1745)) (City of Cape Town, n.d.). Continued in-migration has increased existing pressures of overcrowding and the proliferation of both shacks and ‘backyard shacks’ (Harte et al., 2009, p. 144-146; Smit, 2006). Shack structures, constructed from wood, plastic and corrugated steel sheeting and with limited numbers of windows and doors, are dark, poorly ventilated and prone to damp and flooding (Figure 2).

Figure 1: Map detailing location of Imizamo Yethu.

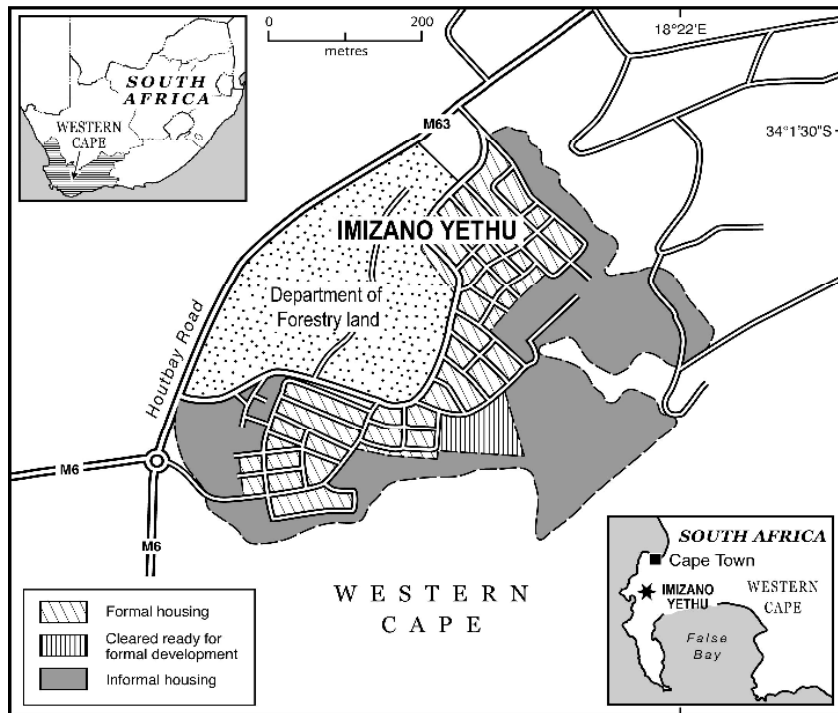
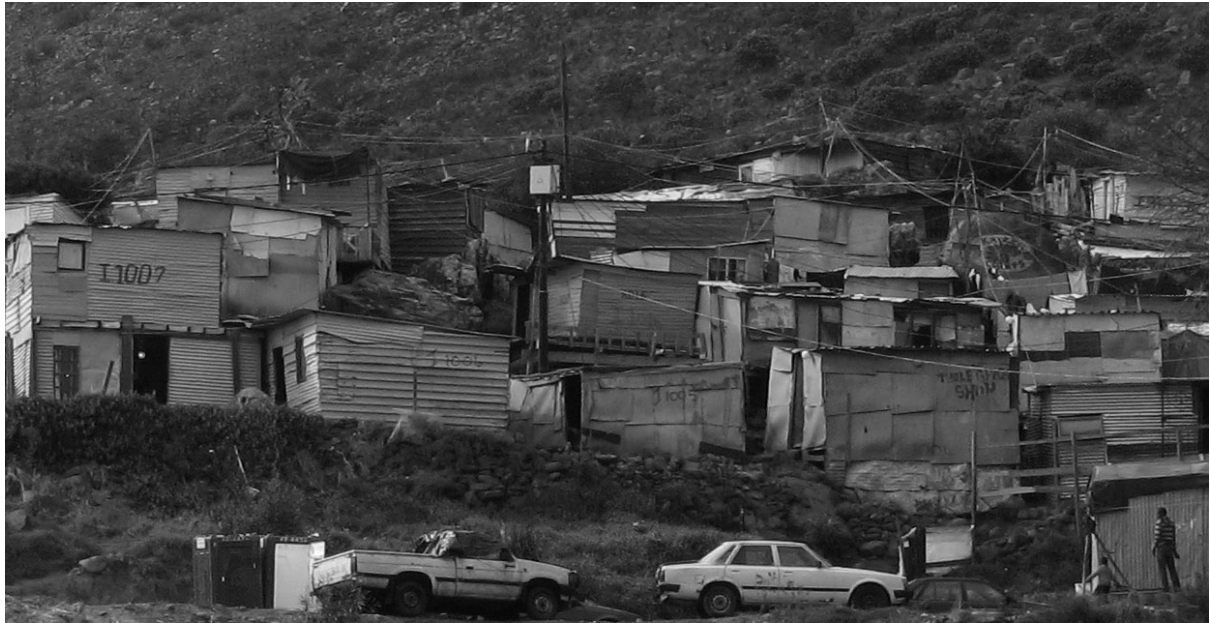


Figure 2: Informal shack dwellings in Imizamo Yethu



Overall, the settlement is marked by a lack of service provision, declining living conditions, environmental unsustainability and poverty (cf. Beall et al., 2000; Harte et al., 2008, p. 145). As Froestad (2005, p. 339) notes residents face a range of socio-economic, service delivery, environmental health and communicable disease challenges. The lack of formal planning means vehicular access is limited, structures are haphazardly laid-out and ‘plots’ are small with little or no outside space, which presents challenges to upgrade projects requiring larger plot sizes (cf. Mukhija, 2001). A significant proportion of residents have developed home-based enterprises - trading, shebeens, nurseries/crèches, hairdressing – in order to generate income (figure 3) (cf. Lizarralde & Massyn, 2008).

Figure 3: Evidence of home-based economic activities in formalised Imizamo Yethu housing



Of the three housing sectors present in South Africa, IY is dominated by the informal sector, with efforts to provide in-situ upgrades falling into the publicly-subsidised sector (cf. Lizarralde & Massyn, 2008). The publicly-subsidised sector was promoted as being centred upon a People's Housing Process with government subsidy (in 2009 this stood at R56,000 (approx. £11,000)) and private sector/non-governmental organisation involvement: however, the implementation of public housing policy in South Africa has largely ignored the People's Housing Process. Amongst the many public housing providers, the Niall Mellon Township Trust (NMTT), an Irish NGO, has constructed 15,000 homes in townships across South Africa, including 600 in IY (for commentaries on NMTT work elsewhere, see Lizarralde & Massyn, 2008). Consultation meetings with communities identify the types, sizes and layouts of new housing construction on top of site-and-service provision. Official government housing waiting lists are used to select those to move into the new housing. Houses are state subsidised and supplemented by provision of additional and improved construction materials and fixtures from NMTT (in the region of R10,000 – 20,000 per property) (figure 4). Additional costs above these subsidies are covered by the new residents, usually in the form of a favourable-term loan from NMTT. This process is based upon experience from other providers that such requirements often result in greater sense of ownership and investment in the property (interview with NMTT, 20 April 2009). Elements of this work could also be framed within the context of housing consolidation but the charitable element of the building and loans provided were not subsidised by government agencies (Adebayo, 2011). The NMTT model of housing delivery is unusual in blending public participation, charitable funding and government support in a way that is far from the typical experience of public housing provision in South Africa.

Figure 4: NMTT housing in Imizamo Yethu



Methodology

Initial visits to IY consolidated links with the community, the IY Development Forum (IYDF) and NMTT through attendance at community meetings and walkabouts with IYDF and NMTT representatives. With the assistance of the IYDF, ten community members previously trained in survey techniques by the Development Action Group were identified to administer the research questionnaire consisting of closed and open questions (quotes reported below are taken from these responses) to a sample of 201 households (92 NMTT properties, 109 shacks both on serviced and un-serviced sites) in July 2009. Despite refresher training, shortcomings in the administration of the questionnaire were evident with several questions not answered by any of the respondents or interpreted incorrectly, limiting analysis of certain variables (notably education, income and time in residence).

As no sampling frame existed, a two-tier sampling process was employed. Assistants surveying NMTT housing sampled every second property; those covering informal dwellings visited every fifth house to enable comparative analysis of the data. Considering the dimensions of housing forwarded by the WHO the survey questionnaire consisted of 4 parts. Part 1 captured information regarding the demographics of the householders, part 2 focussed on physical attributes of the property (Dimension 1 of the WHO framework) as well as psychosocial attitudes towards the home neighbourhood and community (Dimensions 2, 3 and 4). Part 3 consisted of health related questions, all of which were self-report questions as such all results presented are based on self-reported morbidity. The questionnaire asked respondents to report any physical or mental illness coupled with periods of depression. Finally, part 4 focussed on the local community, services, respondent's sense of belonging and the social and economic environment (Dimensions 2 and 4).

The association between housing and health is made complex by a host of confounding variables. In the first analysis stage descriptive statistics show the differences between the demographic variables for each group. The second stage involved bivariate analysis between the outcome variables of interest and socio-demographic variables to determine which variables should be controlled for in any multivariate analysis. Finally logistic regression models were ran to generate odds ratios predicting the probability of the dependent variable when considering a set of confounding factors. In this analysis sex, age and employment were controlled for in all models (sex and employment were entered as discrete variables (male, female and employed, unemployed. Age was entered as a continuous variable). Controlling for the variables did inevitably reduce the sample size of each model as only those responding to all pertinent factors could be included, thus we see wide confidence intervals due to the small number of observations once confounding variables have been accounted for. The outcome measures of interest can be directly related to WHO classifications and for each particular housing risk factor we explored health related differences between NMTT residents and shack dwellers using both statistical methods and the more qualitative data gathered. Within the physical structure of the house we explored if those residents who had moved to a NMTT house were now in better health, or reported fewer health problems and the relationship between housing characteristics and health outcomes. Considering the home environment we explored whether the residents felt that the house itself had an impact on their health and whether they were satisfied with their home as a place to live and the impact of this upon well-being. Questions regarding the physical infrastructure of the area related to the facilities available both in the area and in the houses themselves and those regarding the community focussed on people's sense of belonging, citizenship and attitudes towards housing. To complement the quantitative element we have included quotations from the residents gathered in the questionnaire through open-ended questions.

Results

Demographics

The age and sex distribution of the respondents was relatively similar between both groups (NMTT and shack dwellers). Respondents in NMTT housing had a mean age of 45, compared with 38 in shacks. 80% of respondents were long-term residents of IY with those moving in coming from the Eastern Cape and other provinces in South Africa (only one household from another African country). 66% of respondents were in the labour force,

including both employed and self-employed labour and formal and informal settings. Educational attainment was low: valid comparisons between the housing types for education were not possible due to a large number of missing variables for education in the NMTT households.

Housing dimension 1: The house

As expected those living in shacks were exposed to poor living conditions. Just 52% had piped water either in the home or in the yard, with 34% having a flush toilet. This compares to 84% of NMTT homes with piped water and 89% with a flush toilet. Both shack dwellers and NMTT residents reported levels of condensation, mould or damp with no statistical differences between the groups. In the total sample, 52% of respondents reported someone in the household suffering from an illness or an injury in the past month. Shack dwellers were more than 3 times more likely to report an illness or injury than those living in an NMTT house (OR = 3.290, CI = 1.276, 8.487). Bi-variate analysis explored individual illnesses to determine any significant differences between housing types prior to running logistic regression models controlling for confounding factors. Whilst significantly higher rates of flu, mental illness, skin disorders and 'other' illnesses were found amongst those in shacks, multivariate analysis controlling for confounding factors found only mental illness to be significantly elevated in shack dwellers (OR = 5.739, CI 1.284, 25.641) (mental illness question related to both the prevalence of mental illness and depression). There were no significant differences in numbers of respondents seeing a health professional or in levels of self rated health. Whilst over 68% of NMTT residents were satisfied with their house 62% listed problems which included broken toilets, cracks in the house, damp and mould.

Housing dimension 2: The home

Within this dimension we focus upon the psychosocial aspects of housing, in particular 'feelings' towards the home and the connections residents make between their perceptions of their home and their mental health and well-being. Economic aspects were explored, such as asking residents whether owning their own home would enable them to more easily engage in economic activity and access rights and opportunities. There were no significant differences between the groups on these issues. However, the psychosocial construction of the home as a negative space is reflected in the resident's responses with shack dwellers 3 times more likely to *feel* that their home has an influence on their health or their family's health (OR 3.011, CI 1.283, 7.066). Those living in shacks expanded on the psychosocial impacts of poor conditions such as damp, wet and cold housing. Many residents focussed on weather conditions with one respondent stating "*This house the water coming inside and the children always have a flu all the time*". Residents list elevated levels of coughing, fever, TB and poor mental health as a direct result of their living conditions, one resident reporting a "*lack of space as a result we lacking from the peace of mind [sic]*". When pushed to expand further NMTT respondents mentioned that their "*health has improved since getting a Niall Mellon house*", they also acknowledge the effect on mental health and "*feeling more secure since the house has been build [sic]*". Others mention specific attributes of the home that they feel have an influence on health and well-being such as flushing toilets and electricity. External elements are also listed such as feeling protected from the weather and the threat of fire spreading through the shacks. Furthermore those living in an NMTT home were more than 4 times more likely to report being satisfied with their home as a place for them or their family to live (OR 4.362, CI 1.935, 9.832). When pressed to respond on emotions towards the home respondents listed feelings such as pride, hope, happiness and safety with shack dwellers also listing stress, hope for future development and feeling unsafe.

Housing dimension 3: The neighbourhood

The neighbourhood infrastructure in IY is of poor quality and respondents were overwhelmingly negative about the physical conditions of their neighbourhood, regardless of housing type. Sanitation, lighting, social facilities and economic opportunities were all listed as having a negative effect on the neighbourhood and residents sense of well-being. Whilst residents in the NMTT houses were significantly more likely to report being satisfied with their neighbourhood as a place to live (χ^2 35.23, p 0.000), there were no significant differences in levels of satisfaction with the facilities and services provided in IY. Descriptions of the local area ranged from it being a nice place, safe but overcrowded, popular, unsafe, poorly serviced and popular with tourists. When asked what facilities residents would like in the area responses included a drainage system, play parks, schools, more housing, roads, toilets, electricity, library, businesses and youth opportunities.

Table 2: Odds Ratios

	NMTT	Shack dwellers	<i>n</i>	Significance
Report illness or injury	1.00	3.290 (1.276, 8.487)	127	0.014
Reporting mental illness	1.00	5.739 (1.284, 25.641)	73	0.022
Home influence health	1.00	3.011 (1.283, 7.066)	157	0.011
Satisfied with home	4.362 (1.935, 9.832)	1.00	197	0.000
Community belonging	7.015 (2.159, 20.016)	1.00	171	0.000

** models are adjusted for sex, age and employment. This table presents odds ratios. An odds ratio greater than 1 implies that the outcome is more likely in that group compared to the reference category (presented as 1.00). Confidence intervals are presented in brackets.*

Housing dimension 4: The community

Community cohesion and a sense of belonging are important factors for mental health and well-being (Hagerty et al., 1992). Whilst relocation can result in a loss of community in-situ upgrading can increase resident satisfaction with neighbourhood and sense of pride. Such upgrading can however result in the creation of tension in settlements and ‘*an underclass of those excluded from new housing projects*’ (Smit, 2006). The loss of neighbours and feelings of exclusion can cause social networks to break-up and even those who have moved into new homes reported feeling unsettled and alienated in the community. In IY the majority of those now living in a NMTT house reported increased feelings of pride, belonging and satisfaction with their neighbourhood. NMTT residents were significantly more likely to feel that they belonged to the community (OR 7.015, CI 2.159, 20.016) with one resident commenting “*My belonging has changed drastically because of the structure that is more beautiful than before*” another mentioned how their sense of well-being improved as they now felt “*like a true human being*”. In contrast this feeling of belonging was damaged for some shack residents who complained that those who have been living in IY for less time had been selected, “*I feel rejected because I've been living in Imizamo Yethu for many years*”, others raised feelings of neglect, hopelessness and exclusion. Issues of eligibility for the NMTT were also raised with one residents saying that “*it seems as if I don't belong here anymore because Niall Mellon's house is for the people who are working so that they can pay them if you not working you don't qualify*” and others signalling the importance

of connections and 'knowing leaders' when being selected for the houses. Those remaining in shacks spoke of how NMTT dwellers forgot about the community, no longer participating in activities as "*since they got the houses as if they got everything, they forgot about others*" with home owners charging high rents to backyard shack dwellers "*because we as the people who are living in shacks we rent such a lot of money to the owners of the houses*". Whilst some felt disenfranchised others spoke of hope that the NMTT would come back and provide more homes, "*I still got hope that there's still more coming to Imizamo Yethu*". Regardless, some residents felt that nothing had changed, as one put it "*it was the same before apartheid of 1994 it's still the same*". Both those in the NMTT and those remaining in shacks spoke of losing friends, either through jealousy or through relocation (even within the settlement).

Discussion

The relationship between housing and health in developing countries remains largely unexplored, notably in relation to the contested spaces of informal settlements (for general housing and health literature see Dunn, 2002; Govender et al., 2011; Sverdlik, 2011 and Unger and Riley, 2007 for more on in-situ upgrading see de Wet et al., 2011). Whilst the translation of the relationships between housing and health is difficult in the context of informal settlements, existing studies have demonstrated a general consensus that housing is a significant predictor of related physical and mental health outcomes (Goebel, 2007). This paper reports significant increased odds of mental health for shack residents compared with residents of upgraded formal housing in IY. This finding resonates with work noting the negative mental health outcomes for those living in rented, substandard and inadequate housing (Duvall & Booth, 1978; Hopton & Hunt, 1996). It was not possible however to determine the direction of the relationship between housing and mental health. Our findings cannot demonstrate whether the mental health of those in formal NMTT housing improved or whether the mental health of those in the shacks deteriorated. Shack dwellers spoke of feelings of rejection and stigmatisation, hinting at a deterioration of mental health resulting from social stigma. Simultaneously, NMTT residents who reported increased satisfaction with their home as well as increased levels of pride and belonging may have experienced improved mental health. Whilst this reverse causation may be a factor it does not detract from the possibility of improved mental health for NMTT dwellers.

The lack of difference in self-rated health or various physical health outcomes between the two groups may have three explanations. Firstly, our variable 'length of time in residence' could not be relied upon due to problems of misreporting and error, however we may make certain assumptions about those who live in the NMTT homes. To qualify for these properties, families/residents needed to be at the top of the government housing waiting list, meaning they will have been resident in the township for a prolonged period, resulting in long term exposure to poor housing conditions over the life course. Contrary, with continued rates of in-migration, a significant proportion of shack residents will be relatively new arrivals, likely resulting in a 'healthy migrant' effect (de Wet et al., 2011). Secondly, the lag effect before improvements in physical health are noted could not be accounted for in this singular survey and requires longitudinal study. Finally, health gains made by those in the formal housing may be cancelled out by the overarching living conditions to which the population are still exposed in their wider environments.

If we reflect on the WHO's framework we acknowledge that the dwelling is one factor of 'housing' related to health. The surrounding environment and community are crucial in any health and housing relationship and both groups remain exposed to the same poor 'physical'

environment: formal dwellers' homes have been improved but the social and physical context of neighbourhood and community have not (cf. Evans et al., 2003). This potential explanation is noted in Govender et al.'s (2010, p. 910) work elsewhere in Cape Town which notes that "the underlying assumption that improved housing will result in improved health has been subverted by allowing the new recipients of improved housing to bring slum conditions with them". Complicating this final point is the need to understand how these 'slum conditions' move into the formalised areas through the construction of informal backyard shacks (figure 4). While previous NMTT interventions have sought to hinder such developments (see Lizarralde & Massyn, 2008) there is increased recognition of the vital role performed by these structures in the current housing and socio-economic context. Thus, while shacks are recognised as offering inadequate protection against damp, fire and theft (Smit, 2006, p. 110), they also provide important income for poor families, provide a means for capital accumulation by the poorest, and offer a (partial) solution to shortages in the housing market (Lizarralde & Massyn, 2008, p. 11).

Figure 5: Informal shacks adjoining formalised NMTT housing.



Alongside these insights into health and well-being, shifts in community dynamics and tensions are apparent. While in-situ upgrades are designed to minimise community displacement and disruption, the partial and selective nature of this process enhances intra-community tensions. The backlog of housing needs means progress towards providing housing for all is slow, leaving shack dwellers with a sense of exclusion from progress towards the realisation of this right of citizenship. Misinformation and misunderstandings of the selection procedure for NMTT residents, internal political conflict and frustration with the slow pace of change contribute to a fracturing of community. While many are supportive of the formalisation of housing, and note how some individuals have used their new housing for community benefits (by hosting homework clubs and similar), there is frustration that many have not offered such support and opportunity to other community members. Such perceptions and feelings reflect and exacerbate the daily struggles to survive.

Conclusion

In concluding we recognise that we cannot establish the specific causal pathways between housing characteristics and health outcomes, as described for mental health and well-being. Doing so would require a longitudinal design which takes into account the temporal element beyond the scope of this study. We do, however, demonstrate mixed results for an in-situ upgrading project whereby NMTT residents expressed positive mental health outcomes as well as increased feelings of belonging and general happiness with living standards. Shack dwellers, however, demonstrated reduced mental health and expressed tensions and feelings of exclusion from the benefits of formalised housing. These findings indicate the complexity of relationships between housing and health that are overlooked when focussing on the indoor environment and moves beyond the level of individual buildings towards an incorporation of health outcomes related to a holistic approach to housing. Feelings of belonging, community participation, pride, safety and hope are all bound up in the home and the surrounding environment.

Our findings underscore the importance for in-situ upgrade programmes to adopt a holistic, socio-ecological model to upgrading not just dwellings but neighbourhoods and surrounding infrastructure (cf. Bronfenbrenner, 1979). Research engagements must also adopt such an approach in order to improve understandings of housing related health domains and housing environment effects. Applying a socio-ecological theoretical framework to on the ground housing improvement requires a 'joined-up' approach involving residents, community leaders, government bodies and the NGOs. These engagements resonate with current policy understandings in South Africa and are reflected in the evolution of NMTT approaches. Discussions with NMTT representatives have indicated increased attention in the planning stages towards more integrated development approaches to incorporate business, recreation and transport spaces within in-situ upgrade projects. Broader engagements with development, settlement and health are vital not only to realising holistic positive outcomes in keeping with the WHO's guidelines but also to ensuring the successful design and implementation of urban planning policies in South Africa. The importance of such engagements is highlighted by continued concerns with major urban development projects that are criticised for perpetuating existing, fragmented urban structures.

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