

## **Abstract**

**Aims** To investigate the experiences of life after stroke among different racial groups living within a diverse inner city population

**Background** Provision of health services within inner cities is complex and demanding and requires careful attention to cultural sensitivities. Lack of awareness of these differences can impact on stroke survivors.

**Methods** Data was collected from 213 patients attending an East London hospital outpatient clinic for 12 months. Twenty-eight attendees (12m, 16f) had suffered a TIA and were excluded from further analysis. The data was analysed with respect to gender within 4 groupings (White, Afro - Caribbean, Asian and Other) using Kruskal Wallis and Mann Whitney U tests.

**Results** Of the 185 stroke patients (108 m, 77 f) who had suffered a stroke, there was little difference in respect of age, males ( $68.7 \pm 12.9$  years) and females ( $68.2 \pm 11.9$  years). The Asian men (n=21) reported significantly lower Barthel indices, dressing and greater sleeping difficulties. They required more carer support and had lower health ratings. For the female groupings, the Asian women needed significantly more help with bathing than the Afro-Caribbean group.

**Conclusion** In respect of ethnicity, there was more diversity in terms of functional, psychological and social parameters within the male group. Women may under report their need for assistance, as retaining stoicism can be salient for identity in an inner city community. Understanding of the impact of stroke within different ethnic inner city groups could aid the design and provision of stroke aftercare.

**Relevance to Clinical Practice** Profiling of stroke patients can help in design and provision of post stroke care. Understanding how different racial groups report performing activities of daily living can contribute to culturally sensitive nursing care.

**Key Words:** Stroke, Activities of Daily Living (ADL), inner cities, gender, ethnicity functional, psychological, social, African Caribbean

**Introduction:** Stroke or cerebral vascular accident (CVA) is a rapid development of loss of brain function as a result of interruption of the blood supply to the brain. It occurs when a blood vessel to the brain becomes blocked by a clot (ischaemic stroke) or when there is a break or burst in the vessel and a resulting bleed (haemorrhagic stroke) (Rosamond *et al.*, 2008). Loss of cerebral function results in unilateral loss of movement on one side of the body. Additional focal neurological deficits may include an inability to formulate words or loss of speech and associated loss of vision from one side of the visual field (Smeltzer & Bare, 2004). The severity of damage or impairment is reflected in the level of disability experienced by the stroke survivor. Some individuals experience a mini-stroke, commonly referred to as a transient ischaemic attack (TIA). This is a limited episode with no persisting harm, compared to a stroke, which may cause death or permanent disability (Marieb, 2001).

**Background** Profiling stroke populations can help in planning health programmes for those affected or at risk. Health services within inner cities are complex and demanding and such provisions need careful attention to cultural sensitivities. Care provision, support and health promotion, lack of awareness of cultural differences can impact on the stroke survivor (McNaughton *et al.*, 2011). Traditionally East London has been the first point of arrival for many refugees and asylum seekers, and is known for its social and economic deprivation and poor health.

The London Borough of Newham is the 11<sup>th</sup> most deprived and 13<sup>th</sup> most populous borough in London and is culturally diverse in terms of race, culture, language and food (Newham Public Health Report, 2009). Residents constitute a wide breadth of ethnic backgrounds and share a diversity of religious, cultural and linguistic heritages. They display many features

indicative of disadvantaged communities: low level of qualifications, income and skills base combined with, poor housing and health (Newham Stroke Pathway Profile, 2010).

The overarching aim of the study was to investigate the experience of life after stroke. The intention in this paper is to present an informative, participant-defined map of the lived experience of life after stroke in an inner city multiracial population both to document the evidence and to provide recommendations for supportive stroke care. This paper explores the demographic data associated with the attendance of patients at Newham University Hospital Trust (NUHT) and presents a detailed analysis of clinical reports of the stroke outpatient clinic attendees. The analysis takes into account the age of stroke occurrence and age differences in respect of gender. The concern was to determine the influence and prevalence of stroke within the borough, and to relate these figures to those reported by the London Health Observatory for inner City Populations (\*\*\*\* had to formally apply to London Health Observatory for Newham Stroke admission data 1<sup>st</sup> Jan to 31<sup>st</sup> Dec 2004). The second part of the analysis provides a detailed description of the clinical assessment of attendees. This assessment records the physical and functional, psychological and social impact reported by each patient as they were interviewed by the Health Visitor for Older People, on first assessment at the Stroke Outpatient clinic. The aim was to evaluate any differences in these variables in terms of ethnicity within gender groups and to determine how these personal matters impacted on their lifestyles following stroke.

**Method:** Data was collected for 12 months. Ethical approval was granted by the Central Office for Research Ethics Committees (COREC). Depending on their ethnicity, the subjects were placed in one of four groups; White, Afro Caribbean Asian and Other. Demographic details together with the functional, psychological and social information was recorded by the Health Visitor for Older People using the NUHT stroke clinic assessment. Using a scoring

system from 1 to maximum of 5 or 6 in one instance, the assessment was designed to provide a succinct paper record (see Table 1) (insert table 1 here) of each attendees physical and functional abilities together with a record of their psychosocial and social status (see Table 2) at their first attendance at the Outpatient stroke clinic. The data was ordinal data, with one score being in some way better or worse than another ranging from 1 = independence and 5 = being totally dependent. Based on the Health Visitor and the medical team's assessments, a Barthel Index score was then calculated by the researcher (CM). In order to determine whether the patients attending the stroke outpatient clinic were representative of the national figures reported by the London Health Observatory (2004) for incidence of stroke in Newham, the postcodes of the patients' home addresses were collated into respective postcodes (E12, E13, 15, E16, E6, E7) and Non Newham.

**Data Analysis:** All collected data was entered manually onto a purpose designed electronic database and then collapsed into four main ethnic groups. White Caucasian (White British, Irish, White European, Asian (Indian, Pakistani, Bangladeshi) Black Caribbean (Black Caribbean only) and Other (Black British, Black African, mixed race, Chinese, Jewish). Group descriptions were then viewed using box and whisker plots.

In order to provide a comprehensive view of the population in Newham and the extent of stroke within the borough, the incidence of stroke for the borough and individual wards was calculated. This calculation was based on the available information for NUHT stroke admission from 01/01/2004 to 31/12/04 NUHT and incidence rates based on the population from the National Census 2001 data using a formula: -

Incidence = number of new cases ÷ total population at risk × multiplier (e.g. 100,000).

Note: Multiplier is used to avoid fractions & expressed as a figure per multiplier value (e.g. incidence per 10,000) Cited Moon et al., (2009) in their textbook 'Introduction to epidemiology'.

**Statistical analysis:** Data was grouped into four main domains, demographic, physical and functional, psychological and social. Where appropriate the One-Sample Kolmogorov-Smirnov test was used to determine normative distribution. The physical and functional variables included bathing, continence, dependency, dressing, eyesight, feet, feeding, food preparation, hearing, mobility, maintenance, pain, sleep and the Barthel Index. The psychological variables encompassed behaviour, memory, mood, orientation and overall health rating. Social variables in turn monitored care workers, carers support and social engagement. Descriptive statistics (mean, mode, median, standard deviation, skewness and kurtosis) were used to summarise the data. Any apparent within gender group differences were further analysed either using one-way ANOVA and Tukey post hoc test for numerical data or the Kruskal- Wallis test followed by the Mann- Whitney U test for ordinal data.

## **Results**

**Age and Ethnicity:** Two hundred and thirteen patients attended the NUHT stroke outpatient clinic between 1<sup>st</sup> January 2004 and 31<sup>st</sup> December 2004, of whom 185 had suffered a stroke (108m 77f), mean ages  $68.7 \pm 12.9$  and  $68.2 \pm 11.7$  years respectively. The mean age of onset of stroke for male and female clinic attendees was  $66.8 \pm 12.64$  years. Twenty eight patients (12m 16f) (mean ages of  $68.4 \pm 11.97$  and  $66.1 \pm 12.95$  years respectively) had sustained a TIA and were excluded from further analysis.

White Caucasian males (n=57) were the largest group of attendees had a mean age of  $71.8 \pm 12.5$  years and the corresponding females group (n=40) were  $72.0 \pm 11.2$  years. Analysis of

variance showed that there were no significant differences in the age distribution between the four male groups. In contrast the White Caucasian women  $72.0 \pm 11.2$  years ( $n=40$ ) were significantly older ( $9.91 \pm 2.51$  years  $p= 0.01$ ) than the Other female group ( $61.6 \pm 12.0$  years  $n=15$ ).

**Stroke incidence rates** The 2001 Census showed Newham population had a total of 98,535 residents (47,163 males, 51,372 females) aged 35 to 90+ years. Stroke admission for those over 35 years of age at NUHT (London Health Observatory records) totalled 150 patients, of these 137 (78m, 59f) came from Newham and the remaining 13 (10m, 3f) came from outside the borough.

Based on these figures, the incident rates for stroke were calculated (see methods for formula). The stroke incidence rate for Newham was 32.8 per 10,000. Based on clinic attendance it was calculated to be lower at 23.2 per 10,000. The difference may be accounted for by recognising that some patients may have been too ill to attend the clinic or may have died following their stroke. Having examined the distribution according to postal codes, we also considered the possibility that difficulty in accessing the outpatient clinic may have accounted for the somewhat lower clinic attendance figures.

**Stroke Outpatient Clinic attendance:** Figure 1 (insert figure 1 here) shows the inner city areas where patients lived in relation to NUHT. The smaller pie charts show the proportion of ethnic groups for each postcode. The shading of the postcode areas reflect the percentile of stroke patients attending the NUHT, where high is over 30%, medium between 30-15% and low less than 15%. Newham University Hospital Trust is based in Plaistow, London E13. Figure 1 shows the wards by main postcodes together with the percentage distributions of the four ethnic groups of patient who attended the NUHT Stroke Outpatient Clinic. The small pie charts show that the overall distribution of ethnic groupings was comparable across the

postcodes. Out of 213 attendees, a large number of patients  $n=62$ , (33m and 28f) came from Beckton and East Ham (E6) from a total population of 19,197 persons. The pie chart indicates, 46% were White Causasian, 5% were Afro Caribbean, 36% were Asian and 13% were in the Other group. It was noted that no patients came from Green Street East or West, Little Ilford or Wall End (E12) and no Asian stroke patients came to the clinic from Canning Town, North Woolwich and the Royal Docks (E16).

The perceived relationship between the bus service and clinic attendance will be addressed further in the discussion.

**Functional and physical variables:** Table 2 (insert table 2 here) shows the results of the Kruskal Wallis testing for within group significant differences in mean ranks for both gender groups. Males had significant differences within group ranking for dressing, feeding, sleep and BI total whereas for the female groups there was a within group significant difference ( $p = 0.016$ ) in respect of bathing.

Further analysis using the Mann-Whitney U (Table 4) test showed that the Asian males male required more help with dressing than any of the other three groups and significantly more help ( $p = 0.047$ ,  $n = 22$ ) than those patients in the Other group ( $n=13$ ). Similarly they required more help with feeding than any other group and significantly more help ( $p = 0.007$ ) help than both the White Causasian ( $n=56$ ) and Afro Caribbean ( $n=14$ ) men. In respect of sleeping, they again reported more difficulty with sleeping than in the case of the other three groups and significantly more ( $p = 0.017$ ) than the patients in the Other Group ( $n=13$ ). There were no apparent within group differences in the male grouping for bathing, continence, dependency, eyesight, mobility and pain. (insert table 4 here)

Asian and Other Barthel Index (BI) total ( $p=.03$ ) Asian and Other and in the female groups bathing ( $p=.016$ ) Afro Caribbean and Other. Dressing, part of the activities of daily living in our study  $n=181$  had a median score of 2 indicating difficulty with dressing. There were no significant differences recorded in respect of continence, dependency i.e. the amount of domestic assistance required to ensure maintenance of hygiene eyesight scored (1-4) on good eyesight, ability to see without and with glasses or blind.

**Psychological and social variables:** There were no differences in either the psychological or social variables with the four ethnic female groups but the mean ranks within the male groups were significantly different in respect of both carer support ( $p= .04$ ) Afro Caribbean and Asian and health rating ( $p= .0001$ ) Afro Caribbean and Asian. Table 3 shows significant levels for the physical and functional and social domains. The Asian group needed the most support ( $p=0.015$ ) when tested against the Afro Caribbean and White Caucasian group. Female groups reported needing more professional care than male groups. Within the male grouping, 34% Whites received professional care, Other 23%, Asian 13.64% and Afro Caribbean 8.3%. For females, White 39.4% received professional care, Other 35.7%, Afro Caribbeans 30% and Asian 25%.

Dependency measured the assistance required for both domestic and hygiene care, both groups of patients had a median score of 3, indicating dependence. In respect of maintenance (the ability to do things about the house) and mobility (assistance with walking), most patients reported needing some level of support. In the NUHT assessment patients rated their health from 1 = very good, 2 = good, 3 = fair, 4 = poor and 5 = very poor. 3% of the patients reported that their health was very good. Overall subjects reported their health on the lower rating of the scale. Significant differences ( $p =.002$ ) were observed between the Afro



Caribbean and Asian males for health rating, and both the Asian males and females had the highest mean rank in their respective gender groups.

### **Barthel Index**

The male Asian group had significantly lower BI scores than the Afro Caribbean and White Caucasian male groups ( $p = .013$  and  $p = .005$  respectively). These differences were not found in the female groups. Both Afro Caribbean groups had the highest BI median scores of 18 and 17 and the highest minimum scores of 7 and 8 respectively

**Discussion:** The preponderance of male patients could have been due to the positive effects of health campaigns targeted towards men resulting in a behaviour change (Corcoran, 2007). Within the London Borough of Newham, the Neighbourhood Renewal Scheme (funded by Saving Lives Our Healthier Nation, 1999) ran health promotion campaigns for older people, with a focus on men and this can attribute for our results.

Examination of the maps of local buses to UNHT showed that there were three bus routes (nos 262, 276 and 300) that served the hospital from Beckton and Stratford, from Stoke Newington through West Ham and then Canning Town to East Ham respectively but only one direct bus (no 376) with no interchange operated from the Green Street area and one other (no. 147) with only one bus interchange serving Little Ilford and Wall End.

Male attendees reported more dependency on professional and personal support than females. The most marked difference in percentages of professional care received occurred in the Afro Caribbean group, females required more professional care compared with male patients;

suggesting that, in the Afro Caribbean community, more non-professional care is given to males following a stroke than to females.

Jonsson *et al.*, 2008 assessed the prevalence and intensity of pain in stroke patients over one year. They found that predictors of pain were younger age and sex (female), and that females had greater levels of pain and this pain disturbed their sleep. Our study showed Asian males experiencing more ( $p = .014$ ) difficulty than the Afro Caribbean males in sleeping after a stroke. For the females, there was a significant correlation  $p = .005$  between pain and sleep. This suggests that clinicians need to pay attention to patterns of sleep following stroke, consider the underlying causes and the possible need for medication.

The Barthel Index (BI) has problems with the sensitivity of the scoring (Mayo *et al.*, 2002). Patients who remain limited in their ability to perform functional activities can score the maximum of 20, suggesting that their scores may not reflect their true functional ability. Using the 1991 census data for London, Curtis & Lawson (2000) found that black Caribbean females were more likely than black Caribbean males to report illness. They considered that this might be due to the pressures of fulfilling social roles and reflecting stoicism among Caribbean females. Nazroo, (1997), on the health of ethnic minorities in Britain, noted that African Caribbean respondents were less likely to report the limiting effects of illness.

Our study supports these findings. Markus *et al.*, (2007), using the South London Stroke Register, found that Black patients with stroke were significantly younger than White people and had a higher prevalence of hypertension, diabetes and obesity, all of which can contribute to stroke. All their Black stroke patients were either first generation migrants from Africa or

the West Indies. We did not have access to information on socio-economic status or pre-stroke activity of the subjects and risk factors, but in the male patients there are substantial ethnic differences in the functional levels between the Asian and both the White and Afro Caribbean groups as assessed by the BI. In view of the differences that were identified within the gender groups, it would seem appropriate to implement increased rehabilitation efforts and social support for the male and female Asian groups.

**Psychological and Social** There were no significant gender differences for memory. In our study within the gender groups, Afro Caribbean males and White Caucasian females had better memory compared to the other groups. Lai *et al.*, (2003) found that memory and mood functions can have far reaching effects on the functional recovery of stroke patients. On a national level, the *Household Survey for England* captures such individual rating/perception. One theme surveyed is health and well being where more than half of men and women aged 65 and over claimed that their health was 'good' or 'very good' (57% of men and 55% of women) (DH, 2007).

Those surveyed in our study were different to the national findings; this could be due to the compounded factor that Newham is acknowledged as one of the most deprived boroughs in England (Newham Public Health Department, 2009). Asians rated their health as worse than the patients in the other ethnic groups. This may have some relation to cultural values and practices Kelaher, (2003) posits that this type of reporting can be due to actual difference in health status, or a methodological artefact as a result of a different understanding of the question. The Centre for Disease Control (2011) had a similar conclusion; that Blacks and

Hispanics are more likely to report their health as poor and limiting their activities of living. This could be true for the Asian group in our study. The Department of Health, (2000) reported in the *1999 Health Survey for England* that African Caribbeans had lower global health ratings than the general UK population. Therefore, there may have been some under-reporting by Afro Caribbeans in our study, or that there has been an improvement in the health of Afro Caribbean people due to health promotion efforts and positive engagement.

The impact of stroke and loss of motor function leads to the need for formal or informal care support (Clarke *et al.*, 2000, Patel *et al.*, 2007). Our study showed that Asian males received more ( $p = .015$ ) carer support than the Afro Caribbean male patients. 64% had carers living in the same home, while 71% reported that their care was provided by non-professionals, indicating family, friends and neighbours as their primary carers.

In our study, more men than women required professional care, Afro Caribbean and Asian men and women had more non-professional care while Whites had more professional care. Evaluating the nature of this carer support, in terms of whether the carer lived in the same house or nearby making regular visits, the Asian men received more ( $p = .015$ ) carer support from people living within the same house than the Afro Caribbean men. One possible explanation could be the cultural concept of care and care giving, Stansbury *et al.*, (2005), in their review of stroke data across the USA, concluded that a cultural construct is crucial to understanding stroke among ethnic minority groups. This understanding includes the way care is perceived by the stroke patient and how they understand care to be delivered. Women may underreport their need for assistance, carers or use of carers due to their role and function in maintaining a home and household, and therefore retain their stoicism. Fulfilling such roles is seen as role salience, as these can be salient to the individual's sense of identity.

**Conclusion:** Demographic profiling reflected representativeness of stroke prevalence similar to that of the London Health Observatory figures, based on the 2001 Census figures. Careful analysis of both attendance of the clinic and calculations concerning the population at risk in Newham showed that the clinic attendance figures to a large extent reflected the at risk population within this inner city and that the findings can be applied to similar inner city populations. The findings also suggest that public transport plays a key role in clinic attendance. Understanding of the impact of stroke within different racial inner city groups could aid the design and provision of stroke aftercare while providing culturally sensitive nursing care.

### **Relevance to Clinical Practice**

- Understanding stroke in different racial inner city groups could aid in provision of stroke aftercare
- Public transport plays a key role in clinic attendance and may impact on accessing post stroke care.
- Women may under report the need for support as retaining stoicism can be salient for identity. Therefore nursing and other multidisciplinary team members need to consider gender and ethnicity in post stroke assessment.
- In some Afro Caribbean groups, more non-professional care is given to males than females after a stroke, suggesting a cultural bias. Acknowledging the influence of culture can improve post stroke care.

## References

Department of Health (2000). *The health survey for England 1999*. London: HMSO.

Centre for Disease Control (2011) Health Disparities and Inequalities Report - United States, 2011. Morbidity and Mortality Report Vol 60 Available at <http://www.cdc.gov/mmwr/pdf/other/SU6001.pdf>

Corcoran, N. (2007). *Communicating Health Strategies for Health Promotion*. London: Sage

Clarke, P., Lawrence, J., & Black, S. (2000). Changes in quality of life over the first year after stroke: findings from the Sunnybrook Stroke Study. *Journal of Stroke and Cerebrovascular Diseases: the Official Journal of National Stroke Association*, 9(3), 245- 255.

Curtis, S., & Lawson, K. (2000). Gender, ethnicity and self-reported health: the case of African-Caribbean population in London. *Social Science & Medicine*, 50 (3): 365-385.

Jönsson, A., Lindgren, I., Hallström, B. *et al* (2006). Prevalence and intensity of pain after stroke: a population based study focusing on patients' perspectives. *J Neurol Neurosurg Psychiatry* 77590–595.595

Kelagher, M., Paul, S., Lambert, H., Amhad, W., Fenton, S., & Davey Smith, G. (2003) *Critical Public Health* Vol 13 No 3 231-249

Lai, S. M., Perera, S., Duncan, P. W., Bode, R. (2003). Physical and Social Functioning After Stroke: Comparison of the Stroke Impact Scale and Short Form-36. *Stroke*, 34, 488-493

Marieb, E. (2001). *Human anatomy and physiology*. San Francisco: B. Cummings.

Markus, H., Khan, U., Birns, J., Evans, A., Kalra, L., Rudd, A., Jerrard-Dunne, P. (2007). Differences in stroke subtypes between black and white patients with stroke: The South London ethnicity and stroke study. *Circulation*, 116(19), 2157-2164.

Mayo, N. E., Wood-Dauphinee, S., Cote, R., Durcan, L., & Carlton, J. (2002). Activity, participation, and quality of life six months post-stroke. *Archives of Physical Medical Rehabilitation*, 83(8), 1035-1042  
London ethnicity and stroke study. *Circulation*, 116(19), 2157-2164

McNaughton, H., Feigin, V., Kerse, N., Barber, PA. Weatherall, M., Bennett, D. et al (2011) Ethnicity and functional out- come after stroke. *Stroke* 42(4): 960–4

Moon, G., Gould, M., Brown, T., Duncan, C., Iggulden, P., Jones, K., Twigg, L. (2009). *Epidemiology: an introduction*. Berkshire: Open University Press

Nazroo, J. Y. (1997). *The health of Britain's ethnic minorities: findings from a national survey*. London: Policy Studies Institute.

Newham Public Health Report (2008). *Newham public health report*. Association of Public Health Observatories. London.

Newham Stroke Pathway Profile 2010 available at <http://www.londonhp.nhs.uk/wp-content/uploads/2011/03/NHS-Newham-stroke-profile.pdf> Accessed July 2013

Patel, MD., McKevitt, C., Lawrence, D., Rudd, AG., & Wolfe, CDA. (2007) Clinical determinants of long-term quality of life after stroke. *Age and Ageing* 36 (3) 316-322

Rosamond, W., Flegal, K., Furie, K., Go, A., Greenlund, K., Haase, N., Hong, Y. (2008). Heart disease and stroke statistics - 2008 update: a report from the American heart association statistics committee and stroke statistics subcommittee. *Circulation*, 117(4), e25-146.

Smeltzer, C., & Bare, B. (2004). *Textbook of medical-surgical nursing* (8th edn.). New York: Lippincott, Williams and Wilkin

Stansbury JP, Jia H, Williams LS, Vogel WB, Duncan PW (2005). Ethnic disparities in stroke: Epidemiology, acute care, and postacute outcomes. *Stroke*;36:374–386



List of figures and tables for: Impact of stroke; a functional psychosocial report of an inner city multiracial population.

Figure 1 to show stroke and ethnicity by postal code analysis

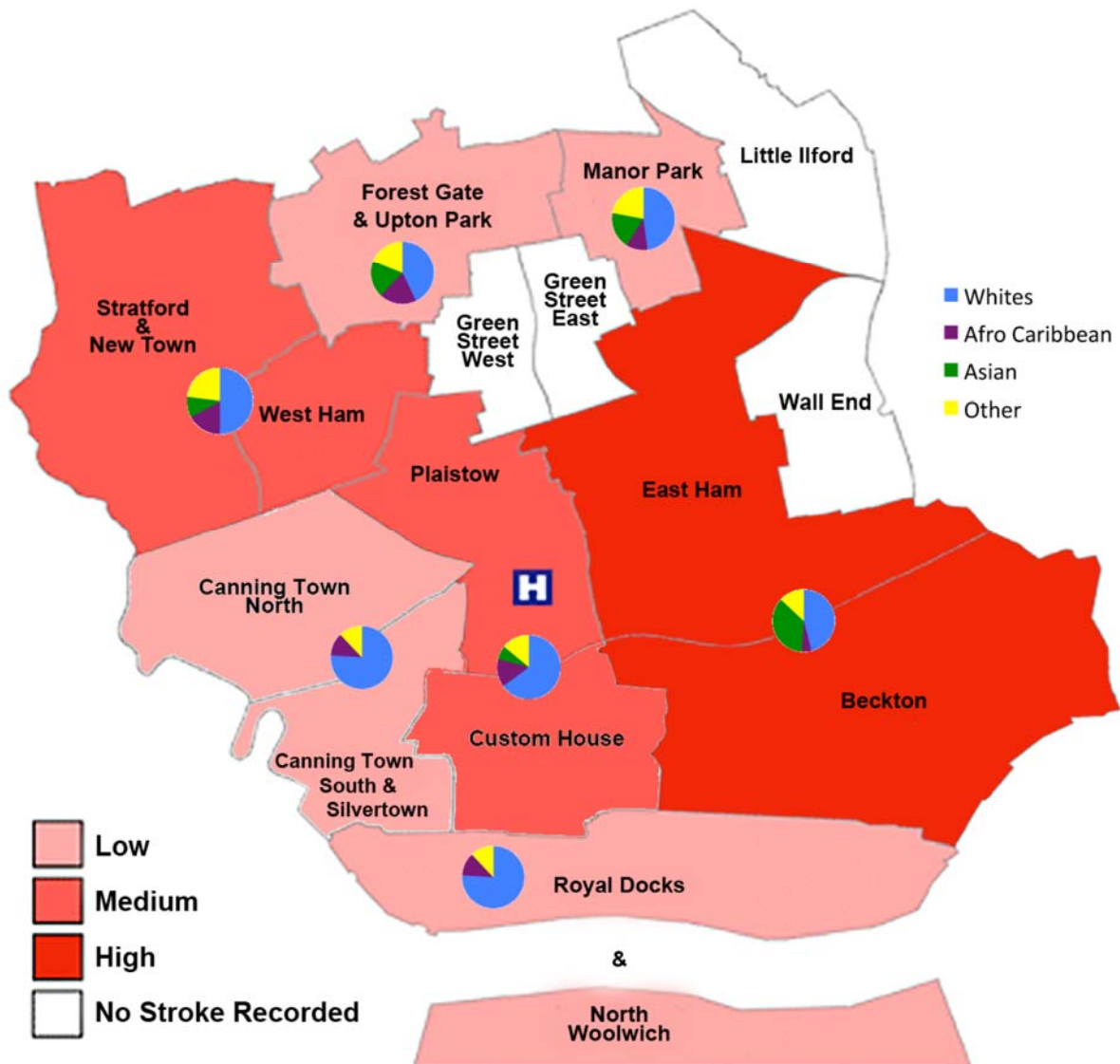


Table 1 to show NUHT scoring system for functional and physical variables

Functional and Physical variables	Score
Bathing	Independent = 1, bathes with assistance = 2, can only wash = 3, totally dependent = 4
Bowel and Urinary Continence	Full continence = 1, occasional lapses = 2, frequent lapses = 3, needs support/enemas = 4, double incontinence = 5
Dependency on domestic help especially in relation to hygiene	Independent = 1, Needs help with shopping = 2, needs domestic help = 3, needs help with personal hygiene = 4, total dependence = 5
Dressing	Dresses independently = 1, with difficulty = 2, able to dress with help = 3, requires total assistance = 4
Eyesight	Good eyesight = 1, uses spectacles = 2, poor with spectacles = 3, blind = 4
Feeding	Independent = 1, minimal assistance = 2, constant assistance = 3, unable to feed self = 4
Feet	Feet ok = 1, regular chiropody = 2, discomfort no chiropody = 3, painful no chiropody = 4, Painful with chiropody = 5
Food preparation	Independently = 1, Unable to cook a meal = 2, can heat a meal and make cup of tea = 3, only able to make a cup of tea = 4, unable to make meal or make tea = 5
Hearing	No problems = 1, some difficulty = 2, good with aid = 3, 4 = difficulty with hearing aid, total deafness = 5
Mobility	Walks independently = 1, walks with difficulty = 2, wheelchair bound = 3, transfers unaided = 4, transfers with help/mainly bedridden = 5
Maintenance	Manage to do odd jobs=1, can manage with help = 2, cannot manage without help = 3, totally dependent = 4
Pain	None = 1, 2 = mild, 3 = moderate, 4 = severe
Sleep	Normal = 1, disturbed occasionally = 2, disturbed regularly = 3, severely disturbed = 4
Psychological and Social	
Behaviour	Fully co-operative = 1, occasionally verbally aggressive = 2, verbally aggressive = 3, occasionally physically aggressive = 4, makes physical attacks on people = 5
Memory	Ability to retain information = 1, forgets recent events = 2, long term memory functioning = 3, moderate impairment = 4, severe impairment = 5, total memory loss = 6
Mood	Normal = 1, mildly depressed = 2, intermittently depressed = 3, severely depressed = 4
Orientation	Completely orientated = 1, doesn't always recall time = 2, doesn't always recall time and place = 3, orientated only in familiar surroundings = 4, completely disoriented = 5
Overall Health Rating	Very good = 1, good = 2, fair = 3, 4 = poor, very poor = 5
Social engagement	Initiates = 1, accepts social contact = 2, avoids social contact = 3, mute/inactive & no social contact = 4
Care Workers	Professional support = 1, non-professional support = 2
Carer Support	Not applicable = 0, lives in same house = 1, nearby regular visits = 2, irregular visits = 3



	Bathing		Dependency		Dressing		Eyesight		Feeding		Mobility		Pain		Sleep		BI total	
Groups	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank
<b>Male</b>																		
White Caucasian	56	51.90	54	50.96	56	52.12	56	56.96	56	48.25*	56	53.30	56	50.53	54	49.55	56	54.60
Afro Caribbean	14	48.96	14	40.46	14	46.43	14	51.71	14	49.43*	14	51.90	14	48.96	14	43.46	14	57.86
Asian	22	60.80	22	63.75	22	66.52*	22	41.91	22	66.36	22	56.10	22	64.82	22	66.95*	22	33.98*
Other	12	44.00	13	48.85	13	41.00*	13	56.08	13	54.69	13	47.80	13	48.00	13	40.08*	13	52.35*
p value	0.35		0.093		0.047		0.198		0.007		0.849		0.17		0.017		0.03	
<b>Female</b>																		
White Caucasian	40	36.18	40	34.94	39	36.97	39	34.69	40	40.31	40	40.95	40	35.74	39	33.27	39	41.32
Afro Caribbean	10	34.10*	10	39.30	10	32.9	10	47.95	10	34.50	10	32.95	10	36.55	10	40.20	9	47.72
Asian	12	56.25*	12	50.67	12	48.00	12	38.54	12	37.67	12	38.92	12	46.42	12	45.08	12	28.63
Other	15	36.00	15	40.30	15	38.6	15	42.07	15	39.57	15	38.87	15	43.40	15	45.70	15	31.03
p value	0.016		0.173		0.315		0.282		0.639		0.763		0.356		0.112		0.089	

Table 2 Kruskal Wallis test for Physical and Functional variables by ethnicity and gender \*p is significant at 0.05 level 2 tailed

Table 3 Kruskal Wallis test for Psychological and Social variables by ethnicity and gender

Groups	Carer Support		Health Rating		Memory		Mood	
	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank
White Caucasian	57	56.59	55	48.43	55	52.67	56	49.95
Afro-Caribbean	14	66.14*	14	41.32*	14	43.82	14	55.25
Asian	23	46.24*	22	70.61*	22	58.55	22	55.05
Other	14	47.93	12	46.71	13	50.88	13	60.27
p value	108	0.04	103	0.001	104	0.45	105	0.58



