



FIRE SAFETY DESIGN ATTRIBUTES OF STUDENTS' HOUSING FACILITIES IN KNUST GHANA

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The purpose of the study was to develop fire safety design attributes for students' housing facilities and also assess the adequacy of design and construction factors that affect fire safety in student housing facilities at the Kwame Nkrumah University of Science and Technology. One noticeable trend in previous works of authors was the prioritisation of the management aspect of fire safety to the detriment of the design and construction aspects. A critical literature search was carried out and 24 fire safety design attributes with requisite standards were identified and validated using carefully selected hostel design and fire prevention management experts. The 24 attributes with the requisite standards which served as a fire safety design framework were used to obtain quantitative data by auditing purposively selected 42 students' housing facilities using various instruments including a BOSCH DLR130 Distance Measurer and a HOBO H8 data logger. The data were analysed using descriptive statistics, content analysis and chi-square test. The study identified 24 fire safety design attributes as critical to students housing designs. Further, the audit revealed that the means of escape, fire safety construction, and fire-fighting and rescue attributes were inadequate in 57%, 69%, 38% facilities, respectively. The rationale behind some of the design decisions was generally conventional design practice contrary to standard requirements. A chi square test also recorded asymptomatic significant values of 0.692, 0.446 and 0.494 for width of stairs, number of stairs and number of exits, respectively, in the facilities; indicating that in contravention to the standards, these attributes were independent of the building capacities. This study provides empirical fire safety design attributes for design practitioners, hostel administrators and fire safety authorities. Architects, hostel developers, and regulatory authorities would find the results very useful.

Keywords: design and construction, fire safety, fire-fighting, Ghana, means of escape, student housing

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