This study was carried out to determine the impact of the knowledge of Human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) (HIV/AIDS) among technical trainees on their sexual behavior. HIV/AIDS is currently one of the most threatening menaces to the current and future generations. The National and County Governments are employing intensive HIV/AIDS campaigns and have even provided a life skill curriculum to technical institutes. However, high level of new infections is still being reported among the youths and technical trainees in particular. This could be attributed to low level of HIV/AIDS knowledge among them. The study was carried out in Matili Technical Training Institute, Kimilili – Bungoma Sub-County, Bungoma County. Ex-post facto design was used. The target population of 350 students was use and a sample of 240 trainees, 155 male and 85 female was selected through stratified and proportionate simple random sampling methods. Data was collected by use questionnaires which were self administered by the researcher. Data was analyzed using descriptive statistics namely; frequencies and cross-tabulations. The study findings indicated that on average 51% of the trainees do not have correct facts about HIV/AIDS. This is an indication of low knowledge level of HIV/AIDS and its impact on sexual behavior among trainees. It was further observed that teenage sex is common among technical institutes’ trainees with 45% of all respondents being sexually active. Trainees engage in unprotected or casual sex since 80% of the sexually active youths revealed that they have never used a condom. The study recommends that precise and simplified HIV/AIDS information sources should be made available to technical institutes’ trainees. Which may include wall charts, brochures and HIV/AIDS information updates from the ministry of health; peer group directed programs on sexual behavior and the spread of HIV/AIDS should be strengthened in the technical training institutes. The finding and recommendations of this study are therefore, helpful in improving and re-inventing the HIV/AIDS awareness campaign strategies in Kenya.

**Key words:** HIV/AIDS, Implication, Knowledge, Sexual Behaviour, Trainees