

Chapter Three: The Methodology

The study had being conducted to evaluate the impact of prostate cancer radiotherapy by means of PSA. The sample was collected at RICK, Radioimmunoassay Laboratory, Khartoum state, Sudan.

3.1 Materials:

This study was carried-out at Radioimmunoassay laboratory using ordinary Prostate Specific Antigen test, patient history, Tele-therapy machines (**CO-60+ Linear accelerator**) using Gama Counter (**PC-RIA-MAS STRATEC**).

3.2 Study Design and Setting:

The study was analytical cross-sectional study used to assess external beam radiation therapy of prostate cancer using PSA in order to assess the outcome of this kind of treatment across RICK Radioimmunoassay laboratory.

3.3 Study Population:

The study was consisted of patients suffering from prostate cancer and treated with radical treatment (Radiotherapy and Surgery dependably or in combination of both),early stage(2-3) and age group between (27-95 years).

3.4 Procedures of PSA Test:

The I^{125} labeled signal-antibody binds to an epitope of PSA molecule different from that recognized by the unlabeled capture-antibody, the two anti-body react with the PSA molecule forming a “Sandwich”. Standard and samples are incubated with a mixture of the anti-body at room temperature, at the end of 2 hours incubation period (no need of a shaker), magnetic immunosorbent (MIS) is added in excess, MIS particles selectively bind the PSA signal anti-body capture, anti-body complex and settle out in magnetic field. A wash step is critical to reducing nonspecific binding to a minimum for increased low end precision. Gamma counter use to measure the radioactivity of (MIS) from that the concentration of PSA can be determined.

3.5 Study Duration & Area:

The study was conducted between “May 2015–May 2017” At Radiation & isotopes Center Khartoum (RICK), Radioimmunoassay Laboratory, Khartoum State, Sudan.

3.6 Variables of the study:

3.6.1 Data collection variables:

- Prostate cancer

3.6.2 Patient data:

- Age.

- Weight.
- stage
- Material status.
- Family history.

3.7 Method of data collection:

The data was collected using a questioner and master data sheet which was including all parameters necessary specially PSA at the time of diagnosis and after treatment finishing. A questioner was filling by all patients to obtain necessary personal data.

3.7.1 Example of Master Data Sheet:

Age	Weight	Stage	MS	FH	PSA score 1	PSA score 2	Tri be	etc

3.8 Method of data analysis:

The collected data analyzed using EXCELL software and statistical package for social science SPSS 21.0 in forms of 3D clustered column and curves program and storage in personal computer with password.

3.9 Ethical issues:

- There will be an official written permission to mentioned laboratories to collect the data.
- No personal patient data had been published.