STUCTURE AND PROCESS FACTORS THAT INFLUENCE PATIENTS' AND NURSES' PERCEPTIONS OF QUALITY IN-PATIENT PSYCHIATRIC NURSING CARE AT MATHARI HOSPITAL, NAIROBI

A DESSERTATION SUBMITTED
TO THE UNIVERSITY OF NAIROBI

IN PARTIAL FULLFILLMENT OF THE REQUIREMENT
FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING
(MENTAL HEALTH AND PSYCHIATRIC NURSING)

IN THE SCHOOL OF NURSING SCIENCES
OF THE COLLEGE OF HEALTH SCIENCES

November 2006

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DECLARATION

I. Wagoro M C.Atieno, hereby declare that this dissertation is my original work and has not been presented for a degree, any award or published anywhere

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APPROVAL

This thesis has been submitted for examination as part fulfillment for the award of the Degree of MSc Nursing (Mental Health and Psychiatric nursing) of the University of Nairobi with our approval.

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DEDICATION

This work is dedicated to all patients who suffer from mental disorders and the associated social stigma; to all psychiatric nurses and other mental health professionals for their efforts in offering specialized care to these patients.

It is my hope that the results of this study will contribute towards improving the lives of those suffering from mental disorders.

ACKNOWLEDGEMENTS

I am most grateful to the many individuals and institutions whose contributions were instrumental in the completion of this study.

I acknowledge the following with special appreciation: My supervisors, Dr. A.K.Karani, Senior Lecturer, School of Nursing Sciences, Dr. J. Musandu Senior lecturer and Director, School of Nursing Sciences, Dr.C.Othieno, Senior lecturer and Chairman, Department of Psychiatry for their tireless guidance, patience, and encouragement during the long and sometimes arduous experiences that are inevitable in carrying out a task such as this research process.

I would like to recognize Dr.G.W.Odhiambo-Otieno,(KU), Mr.John Arudo,(AKU), Mrs.Margaret Chege (KMTC) and Mr.Fred Oyugi (UoN) for their technical advice and helpful suggestions during the research process.

I am indebted to the Administration of Mathari Hospital especially the office of the ACNO, and all nurses for their cooperation not forgetting my research subjects for consenting and participating in the study.

I express my gratitude to Ethics Committees of University of Nairobi/Kenyatta National Hospital, Ministry of Education, Ministry of Health and Mathari Hospital for granting me authority to conduct this study.

I am grateful to the Administration of the School of Nursing Sciences for its role in facilitating the completion of this research process and to all lecturers who contributed in one way or another.

I appreciate the constant encouragement from my classmates and recognize the support of my family, relatives and friends when the going was tough.

I thank God for His Grace and Mercy during the entire period of this challenging task.

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GLOSSARY OF ABBREVIATIONS

ACNO	Assistant Chief Nursing officer
AKU	Aga Khan University
CHS	College of Health Sciences
CME	Continuing Medical Education
DMH	Division of Mental Health
DSRS	Department of Standards and Regulatory Services
EPN	Enrolled Psychiatric Nurse
FGDs	Focused Group Discussions
GBD	Global Burden of Diseases
ICD-10	International Classification Diseases-10th edition
ICN	International Council of Nurses
I.R	Interpersonal Relationships
KDHS	Kenya Demographic Health Survey
KNH	Kenyatta National Hospital
KU	Kenyatta University
MoH	Ministry of Health
MOS	Medical Outcomes Study
MSU	Maximum Security Unit
RPN	Registered Psychiatric Nurse
SPSS	Statistical Package for Social Sciences
UoN	University of Nairobi
WHO	World Health Organization
WMHA	World Mental Health Atlas

OPERATIONAL DEFINITIONS

Nurse-patient interpersonal relationship- Interactive therapeutic processes between the nurse and patient that facilitate a patient's recovery. It moves through the phases of orientation. identification, exploitation and termination phase..

Perception of nursing care – refers to awareness and interpretation of nurses' activities within the ward environment.

Positive Perception of nursing care – Feelings of satisfaction and having benefited from care and the patient is willing to recommend the ward for another person who needs same care.

Negative perception - Feeling that care given is not satisfactory and patient doesn't wish to recommend any one who needs psychiatric care for admission to the same ward.

Quality of nursing care – The degree to which nursing services for patients meet established standards.

Quality Psychiatric Nursing Care – Totality of features and characteristics of psychiatric nursing services that meet in-patients' needs. It has the ability to satisfy in-patients and is based on the utilization of the nursing process within the context of nurse-patient interpersonal relationship.

Structural factors – attributes of environment in which care is given. In this study the investigator looks at the physical characteristics, equipment, supplies, administrative arrangements and the staffing patterns in the selected wards.

Process – The practices that are followed in the provision of psychiatric nursing care. In this study the investigator looks at the psychiatric nursing care practices in relationship to the interpersonal assumptions of Peplau (1952).

Outcome of care – Impact of care. In this study the investigator looks at the patients' and nurses' perception of care.

ABSTRACT

In-patient psychiatric units which play an important role in management of patients with severe psychiatric disorders often lack structures and processes needed for quality nursing care. Patients' and Nurses' perception of care is an important indicator of quality of care and should be assessed regularly (Campbell, 1999; Garry and Shannon, 1997). Yet such assessment has not been done in Kenya to evaluate standards of in-patient psychiatric nursing care despite complaints of inadequate structures and processes of care in a country where more than 25% of patients in a general out patient clinic suffer from mental disorders; And WHO having developed quality checklist for evaluation of psychiatric care (WHO, 1994).

The purpose of this study was therefore to explore structure and process factors that influence the patients' and nurses' perception of quality in-patient psychiatric nursing care at Mathari hospital, Nairobi. Donbedians' (1966) Structure-Process-Outcome model of quality care and Peplau's (1952) Interpersonal Relationships Theories were the frameworks for this study.

It was a descriptive, quantitative and qualitative study of a sample of 236 in-patients and 131 nurses selected by stratified sampling. One of inclusion criteria for patients was a score of 24/30 on the mini mental status assessment tool. Data were collected for two months using mainly semi structured questionnaires and observation checklist tools modified from Gigantesco (2003), Wallace (1999) and WHO (1994) and was analyzed using SPSS version 10. Differences in proportions were determined by calculation of confidence interval and summary chi square statistic. p-values of ≤ 0.05 were considered statistically significant.

A major finding was that physical environment was significantly related to nurses and patients' satisfaction (X^2=10.456, p=0.0012) and (X^2=5.506, p=0.002) respectively. The use Interpersonal relations principles of Peplau (1952) was also found to have a positive influence on patients' and nurses perception of care.Overall,WHO(1991) criteria of good quality standards was met by only 4 (28.5%) out of fourteen wards.

One of the recommendations by the researcher is that Hospital administration urgently improves structure and process factors of care at Mathari Hospital in order to improve quality of patient care.

CHAPTER ONE: INTRODUCTION

1.1 Background

Provision of quality psychiatric services is a priority in all psychiatric institutions. However, quality in psychiatric nursing care is still far from reaching acceptable standards. Global reports indicate that both patients and their families feel that psychiatric patients do not always get the help they need (Wallace and Robertson, 1999).. WHO (2001) report indicates that standards of psychiatric care, including in-patient psychiatric nursing care, are still very low in many countries. The WHO report states that over 40% of countries do not have a mental health policy to guide delivery of psychiatric services, more than 25% of countries do not have access to basic psychiatric medication at the primary level and 70% of the world's population has access to less than one psychiatrist per 100,000 people while the recommended ratio by WHO is 1:10,000 people

World Health Organization (2001 and 2003a) argues that psychiatry is a crucial aspect of health services, yet in many countries, it remains stigmatized, neglected, and under resourced. Qualified psychiatric care providers, including nurses, are in short supply due to recruitment and retention problems and this significantly compromises the quality of in-patient psychiatric nursing care. WHO recognizes that quality is important for all mental health systems including psychiatric nursing care from a variety of perspectives. From the perspective of the patients, quality ensures that they receive the care they require and their symptoms and quality of life improve. From the perspective of a family member, quality provides support and helps preserve family integrity. From the perspective of the service provider quality ensures effectiveness and efficiency. From the perspective of the policy maker, quality is the key to improving mental health of populations.

Despite the concern to improve quality of Psychiatric care and development of checklists for evaluation of care, researches done globally indicate that a crisis still exists in psychiatric in - patient nursing care with poor structures and processes (Rosssberg and Friis, 2004 and WHO, 1994). In the United States, more than 20% of all adults and children experience psychiatric problems yearly and only half of them receive psychiatric nursing care they require (Kass, 2004).

Psychiatric services in Kenya continue to lag behind other health care services largely due to social stigma associated with psychiatric disorders. Most psychiatric facilities are renovations of old buildings such as stores. Even where new plans for health facilities are being considered, psychiatric units are never catered for (MoH, 2004). The Division of Mental Health, which was established in 1987 to guarantee high standards of in-patient psychiatric nursing care among other responsibilities, faces many structure and process problems which negatively affect delivery of quality in-patient psychiatric nursing care. Structure problems include inadequate finances; inadequate and depreciated facilities which lack equipment and supplies, inadequate numbers of psychiatric professionals and limited training facilities for them, absence of mental health policy to guide both out-patient and in-patient psychiatric nursing care (WHO, 2005). Process problems include absence of documented scientific nursing theories to guide nurse-patient interaction, psychiatric in-patient nursing care delivery modes and lack of quality improvement procedures (MoH, 2004). Further, an interview with the Director of Mental Health revealed that studies to evaluate the status of quality psychiatric services including in-patient psychiatric nursing care have not been done in Kenya due to budgetary constraints despite the WHO checklist tool for quality evaluation having been produced in 1994.

In Kenya inadequate numbers of Psychiatric Nurses coupled with poor physical structures and lack of recommended nursing models explained above significantly compromise psychiatric nursing services. Psychiatric Nurses are largely responsible for quality in-patient psychiatric services in a country where only a total of 15 psychiatrists exist in the public sector for a population of over 30 million people of whom 20 to 30% have psychiatric problems. (MoH, 1994; MoH, 2004; WHO, 2001). Mathari Hospital's Nursing Report of June 2005 to CNO indicates that of the 246 nursing staff in Mathari, 121 are psychiatric nurses out of whom only 35 are RPNs for the daily average number of 600 patients leading to work overload for the nurses.

1.2 Problem Statement

Psychiatric morbidity which currently accounts for 13% of the Global Burden of Disease (GBD) and will rise to 15% of GBD by 2020, is maximal in young adults, who make up the most productive section of the population (WHO, 2003b).Kenya is part of this Global community with a relatively young age structure forming 52% of the population (KDHS, 2003) and is likely to suffer from the effects of psychiatric morbidity.

The chronic nature of most psychiatric disorders causes overcrowding and places enormous cost on hospital resources. In addition, it increases workload and is a major contributor of poor working conditions which lead to stress, job dissatisfaction and burnout among nurses. For patients, poor quality of care leads to readmissions, and long hospitalization (Rossberg and Friis, 2004).

Improving quality of nursing care for patients with psychiatric disorders is therefore needed to reduce long hospitalization and overcrowding in hospitals and to improve quality of life for patients within their communities (MoH, 2004). In-patient units play an important role in the care of patients with severe psychiatric disorders. Yet in most cases, as Rossberg and Friis, (2004) and WHO, (2005) report, these units always lack structures and processes that are needed for quality nursing care. In Kenya, Quality In-Patient Psychiatric Nursing care is compromised by the inadequate numbers of psychiatric nurses coupled with poor physical structures and processes for providing care within the units (MoH, 2004).

Although patients' and nurses' perception of care is an important indicator of quality of care and should be assessed regularly (Campbell, 1999; Garry and Shannon, 1997); and despite WHO developing quality checklist for evaluation of psychiatric care (WHO, 1994), available literature and an interview with Director of Mental Health indicate that no such assessment has been carried out in Kenya due to budgetary constraints.

In view of this prevailing situation, there was urgent need to evaluate structure and process components of care and their influence on patients' and nurses' perceptions of quality in-patient psychiatric nursing care in order to improve the care of patients suffering from psychiatric morbidity

1.3 Purpose of Study

The purpose of this study was to explore the structure and process factors that influence patients' and nurses' perception of quality of in-patient psychiatric nursing care at Mathari Hospital, Nairobi.

1.4 Justification of study

No study has been carried out in Mathari Hospital to establish the standards of psychiatric nursing care for in-patients although the need to improve psychiatric nursing care has been recognized globally and WHO (1994) has developed checklist for evaluation of psychiatric care.

Interviews with senior hospital nurse administrators at Mathari Hospital indicate that although quality improvement programme was formulated in 2003, three years later, it has largely remained non-functional. Even quality reports by nurses in-charge about their wards to the ACNO Mathari Hospital fail to give comprehensive information on structure and process components of care. Besides, the reports don't indicate patients' and nurses' perceptions of care at the hospital

Findings from this study will expand knowledge about the current state of psychiatric nursing in this hospital, serve as baseline for future evaluations and will also be used to improve in-patient psychiatric nursing care.

In addition, the Interpersonal Relations assumptions of Peplau (1952) used as the process of nursing care in this study may be used to guide nursing practice in Mathari Hospital and serve as the scientific basis for quality improvement in nurses' practice.

1.5 Study Question

What are the influences of structure and process factors on patients' and nurses' perception of quality in-patient psychiatric nursing care at Mathari Hospital?

1.6 Hypothesis

1. There is no relationship between structure characteristics and patients' perception of in-patient psychiatric nursing care.
2. There is no relationship between structure characteristics and nurses' perception of quality in-patient psychiatric nursing care.
3. The use of interpersonal relationship assumptions of Peplau in the care process does not influence patients' and nurses' perception of quality of in-patient psychiatric care.

1.7 Definition of research Variables

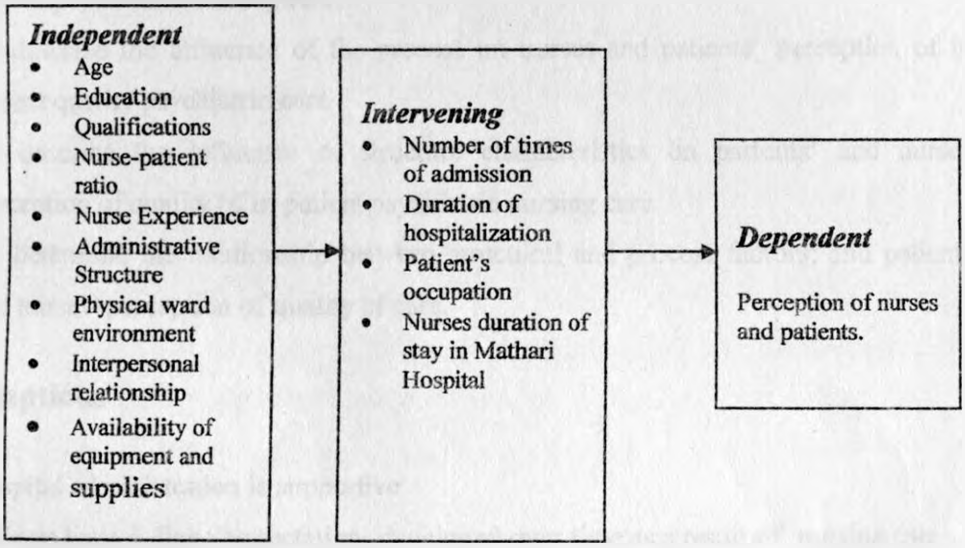

Figure 1 Research variables (modified from Donabedian 1966)

1.8 Objectives of Study

1.8.1 General Objective

To explore structure and process factors which influence patients and nurses' perception of quality in-patient psychiatric nursing care at Mathari Hospital Nairobi.

1.8.2 Specific Objectives;

1. To determine structure factors that influence patients' perception of quality of in- patient psychiatric nursing care.
2. To determine structure factors that influence nurses' perception of quality of in-patient psychiatric nursing care.
3. To describe the influence of the process on nurses and patients' perception of in-patient quality psychiatric care
4. To describe the influence of structure characteristics on patients' and nurses' perception of quality of in-patient psychiatric nursing care
5. To determine the relationship between structural and process factors; and patient's and nurses' perception of quality of care.

1.9 Assumptions

1. Hospital administration is supportive
2. Patients have definite expectations developed over time as a result of nursing care.
3. The climate of the hospital encourages open communication.

CHAPTER TWO: LITERATURE REVIEW

2.1 Historical Perspectives of Quality of In-Patient Psychiatric Nursing Care

Quality assessment and assurance in nursing generally can be traced to Florence Nightingale who in 1854 demonstrated the first data base in nursing outcomes in her findings that death rates had reduced from 42% to 2.2% within six months when nursing interventions such as cleanliness, wound dressing and bathing were performed (ANA, 2003; Burns and Groove, 2001).However, the modern era of quality assurance in nursing began between 1952 and 1966 when American Nurses Association established committees and divisions to develop standards of nursing care (Huber, 2001).

However, quality in psychiatry, which includes psychiatric nursing, continued to lag behind other health care services. According to Varcarolis (1998), Psychiatric nursing was still unpopular with custodial care which did not consider patients or their relatives at the turn of the twentieth century as it shared general stigma associated with psychiatric morbidity and psychiatric care institutions. Quality assurance in psychiatric care started with reforms in health care and research findings of variability in patterns of care in non-psychiatric institutions. Consequently, there was need to find out if the same variability existed in psychiatric nursing care (Huber, 2001).

The demand for evaluation of care in psychiatry also continued to rise at international fora in response to many factors. WHO (1994) developed quality checklist for evaluation of care in all psychiatric facilities to ensure that patients receive care that would improve their quality of life. World Federation of Mental Health (2004), reported that psychiatric morbidity were among the most significant contributors to global burden of disease estimated to be 5 out of 10 leading causes of disabilities in the US and other developed countries.

2.2 Characteristics of Quality Psychiatric Nursing

Chassan and Galvin (1998) and WHO (2003a) define quality as the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with established professional, scientific and ethical standards of practice and patient should benefit from the care that is provided. However, Williams (1998)

reports that patients and health care professionals view quality nursing care from different perspectives. While health care professionals view competency as quality nursing care, patients perceive quality nursing care as caring interpersonal interactions. For in-patient psychiatric care, it means each patient in the ward has access and benefits from nursing care that is based on the application of Interpersonal Relationship principles of Peplau developed in 1952(Varcarolis,1998).

Quality in-patient psychiatric nursing care is characterized by its ability to focus on the client whose satisfaction with care is considered an important evaluator of care (Barker and Orrell, 1999; Huber, 2001; Hildenhovi and Laippala, 2001). Okeyo and Adelhardt (2003) advocate for nurses' involvement as an important characteristic of any quality health care programme including psychiatric in-patient care because nurses are motivated to increase their work output that leads to patient satisfaction with care. According to Williams (1998), nurses' involvement has been lacking in many cases hence the need to urgently involve them through evaluating their perception of care among other methods. Okeyo and Adelhardt (2003) argue that quality of patient care must be regularly and frequently measured so as to meet the constantly changing needs of patients. Al-Kandari and Ogundeyin (1998) supported this view in their argument that maintenance of quality care in any professional discipline, of which psychiatric nursing is an example, requires constant review and evaluation. Al-Kandari and Ogundeyin further explain that results from such evaluations should show patients' and nurses' satisfaction as one of the indicators of quality of care.

2.3 Nursing Theories in Quality Psychiatric Nursing

Nursing theories which have been used to direct care of quality in-patient psychiatric nursing care include Dorothea Orem's self care agency, Calista Roy's adaptation, King's open system, and Peplau's interpersonal relationships among others (Farcland *et al* ,1991 and Varcarolis ,1998).

Interpersonal Relations Theory developed by Peplau in 1952 is reported by Farcland *et al* (1991) and Varcarolis (1998) as the most favoured theory of psychiatric nursing because of its emphasis on nurse-patient therapeutic relationship, which is the basis of Psychiatric nursing. Nursing is defined as a significant therapeutic and interpersonal process that aims at

increasing the patient's competencies leading to the forward movement of personality that Peplau defines as health. Nurse-patient interpersonal relationship moves through overlapping phases during which the nurse and patient assume changing roles and goals. The phases of nurse-patient relationship as explained in Peplau's theory are orientation, identification, exploitation and resolution also called termination phase.

In orientation phase, the patient has felt needs and seeks professional help. Nurse and patient meet as strangers and the nurse works collaboratively with the patient to identify and clarify the problem. The focus in this phase is on how the nurse comprehensively assesses client, helps client identify problem, explains roles and reduces tension and anxiety. Also to be addressed here are confidentiality, parameters of the relationship whether formal or informal and plans for termination.

In identification phase, the patient identifies those who can help him/her meet individual needs.Nurse helps patient understand his/her illness by helping patient explore feelings. The focus is on whether the patient understands his/her role in the relationship has a feeling of belonging and expresses capability of dealing with his/her identified problem.

In exploitation phase, patient takes advantage of all available services based on his/her interest and needs. Treatment regimes are implemented, client attempts to attain new goals and begins to develop independence and is self directing. The nurse assesses the extent to which the patient is likely to attain new goals. The nurse identifies feelings of transference and counter-transference, which commonly manifest at this stage and deals with them.

Resolutions/Termination phase is the last phase during which relationship must be terminated. Nurse identifies feelings of anxiety separation and loss and helps client deal with them. The focus is on the extent to which the nurse has helped the patient to gain independence and problem solving techniques and client understands importance of healthy living behaviours.

Peplau also describes six nursing roles within the phases of nurse-patient relationship, which illustrate the dynamic character of roles in a typical clinical nursing situation.

These roles are:-

- *Stranger role.* The nurse performs this role during orientation phase. The nurse receives the patient whom he/she does not know in the same way one meets a stranger in other life experiences. However, in this Interpersonal Relationships, the nurse is expected to provide acceptance that builds trust.
- *Resource role.* The nurse plays the resource role during working phase when he/she interprets clinical data and gives appropriate information to patients.
- *Teaching role.* The nurse performs this role by giving instructions and providing training to the patient. It involves analysis and synthesis of learner's experience. This role is performed by the nurse during working and termination phase.
- *Counseling role.* The nurse helps the client to understand and integrate the meaning of current life circumstances besides providing guidance and encouragement. The nurse needs to perform this role during all phases of the Interpersonal Relationship.
- *Surrogate role.* During the working phase, the nurse sometimes helps clients identify domains of dependence and acts for patient in activities of daily living that the patient cannot perform and on patient's behalf as an advocate.
- The nurse also plays *leadership role* during which he/she helps patient assume maximum responsibility for meeting treatment goals in a mutually satisfying way.

Using this framework, the nurses' role at each phase of relationship is evaluated to determine how successfully it is performed. Quality of the process of in-patient psychiatric nursing as perceived by patient depends on whether the nurse plays her/his role successfully during the phases of relationships. Thus interpersonal relationship becomes the process that links structure to outcomes in Donabedian's (1966) structure-process-outcome model of quality care in this study.

2.4 Evaluating Quality of In-Patient Psychiatric Nursing Care

Constant evaluation of care is important since it ensures achievement of benefits of quality in-patient psychiatric nursing care. These benefits have been reported in many researches including the one by WHO (2003b) which attributed a reduction in in-patient psychiatric bed occupancy by 30% in Brazil to improved quality in-patient psychiatric nursing care.

Rossberg and Friis (2004) also reported that nurses' job satisfaction which is an indication of quality in-patient psychiatric care results in high nursing output associated with patients' satisfaction with care. According to Rossberg and Friis (2004), when patients' satisfaction with care is high, patients' compliance with treatment rate of relapse decreases and their quality of life also improve.

One of the first and still widely used models to evaluate quality in health care as reported by ANA (2003), Burns and Grove (2001) and Huber, (2001), was developed by Donabedian in 1966 and has been used to guide care for nearly four decades. It includes structure, process and outcomes. Measurement of these three components provides valid information about the quality of care. According to ANA (2003), Donabedian's quality of health care model of 1988 has three dimensions as explained below

- *Structure* consists of system elements that guide care. They include organization's vision, mission and policies. Physical facility, financial management, and staff and patient characteristics are also included. Donabedian (1988) proposed that physical facility characteristics and administrative arrangements can be measured by use of direct observation checklist. Structure characteristics influence on care can be positive or negative. Garry and Shannon (1997), Hildenhovi and Laippala (2001) and Sixma and Kerssens (1998) in their studies identified institution policies that allowed free discussions and inclusion of patients in their care, competent staff and good environment characteristics such as clean and attractive rooms with recreation, privacy, dignity and comfort as some of the structure characteristics that contributed to patients' satisfaction with care. In studies by Al-Kandari and Ogundeyin (1998) and Rossberg and Friis (2004), nurses' job satisfaction was positively associated with policies that encouraged effective communication among nurses and between nurses and their superiors and other disciplines and caring for patients whose illnesses required less complex care.
- *Process* consists of activities of care, which include technical and interpersonal style. Process is a more sensitive measure of quality than outcome since a poor outcome does not occur every time there is an error in the provision of care. However, its use alone to measure the quality of care has been criticized as it can be affected by the structure. In the process, provider interaction can be measured through participant observation using a checklist.

- *Outcomes* consist of clinical end points, satisfaction with care, functional status and general well-being. Outcome is measured by use of questionnaires and FGDs on client satisfaction with care, specific client behaviour such as compliance with treatment, knowledge about his/her condition, frequency of admissions and incidence rates. However, its use alone as a measure of quality is disadvantageous in that factors not under the control of health care providers, such as differences in patients' characteristics can be misleading.

Donabedian model was also used by American Medical Association in 1989 as explained by Huber (2001) in the Medical Outcomes Study (MOS) designed to identify elements of physician care associated with favourable patient outcomes. Variations in the use of resources and in physician technical and interpersonal styles were examined. However MOS failed to control for the effects of nursing interventions, staffing patterns and nursing practice delivery models on medical outcomes. For example, coordination of care, counseling, and referral activities which are more commonly performed by nurses than physicians, were considered in the MOS as components of medical practice.

The Kenya Quality model advanced by Okeyo and Adelhardt (2003) will provide conceptual framework for quality improvement for the Ministry of Health when implemented. It is based on structure, process and outcome principles as the Donabedian (1966) model. In this model, however, although specific standards for structure and processes have been developed, emphasis is laid on results such as; patients satisfaction, health facility and programmed performance, staff and society satisfaction.

These models lack the specific role of nursing and how nurses influence patient care. Duffy's and Hoskin's (2003) nursing role-effectiveness model lays special emphasis on the unique role of nursing on improving patient outcomes through wholly compensatory actions. Therefore this model is more applicable in acute care settings. For Psychiatric mental health nursing, Peplau's (1952) Interpersonal Relations theory would be appropriate since the essence of nursing according to Peplau is the nurse-patient therapeutic relationship.

In this study, Interpersonal relations theory of Peplau (1952) is incorporated in Donabedian's quality model so as to determine the unique role of nurse- patient therapeutic relationship as the process component of quality in-patient psychiatric nursing care.

Some of the tools that have been used previously to evaluate in-patient psychiatric nursing care include Rome Opinion Questionnaire (ROQ) for psychiatric wards developed by Gigantesco and Morosini (2003) ROQ was developed after the realization that there was an increase in number of studies measuring patient satisfaction in a variety of mental health care settings yet the psychometric properties of the questionnaires had not been adequately validated. However it failed to include nurses' perception of care. The quality checklists from WHO follow the Donabedian's format in that it has the structure, process and outcome factors to be evaluated. It is a more comprehensive tool for use particularly in a facility where no base line data on quality of care exists hence its selection in the current study.

2.5 Conceptual Frame Work

The main conceptual frameworks used to guide this study were derived from structure-process-outcome model of Donabedian (1966) and interpersonal relations theory of Peplau (1952).These theories have been explained further in sections 2.3 and 2.4 of the current chapter.(Figure 1 summarizes the conceptual framework)

In this framework, the structure consists of nurse, patient and environmental characteristics. The process consists of activities between the nurse and the patient .these activities occur within the nurse-patient relationship which moves through four phases summarized in figure 2.Perception is the outcome of interaction between structure and process factors.

If all structure requirements are available and functional and the process of care is effective, outcome will be positive perception. But practically, many of the structure factors are never functional and therefore negatively affect the process of care and so perception is not always positive.

This study explores the structures and process factors that affect perception of patients and nurses with regards to in-patient psychiatric nursing care at Mathari hospital.

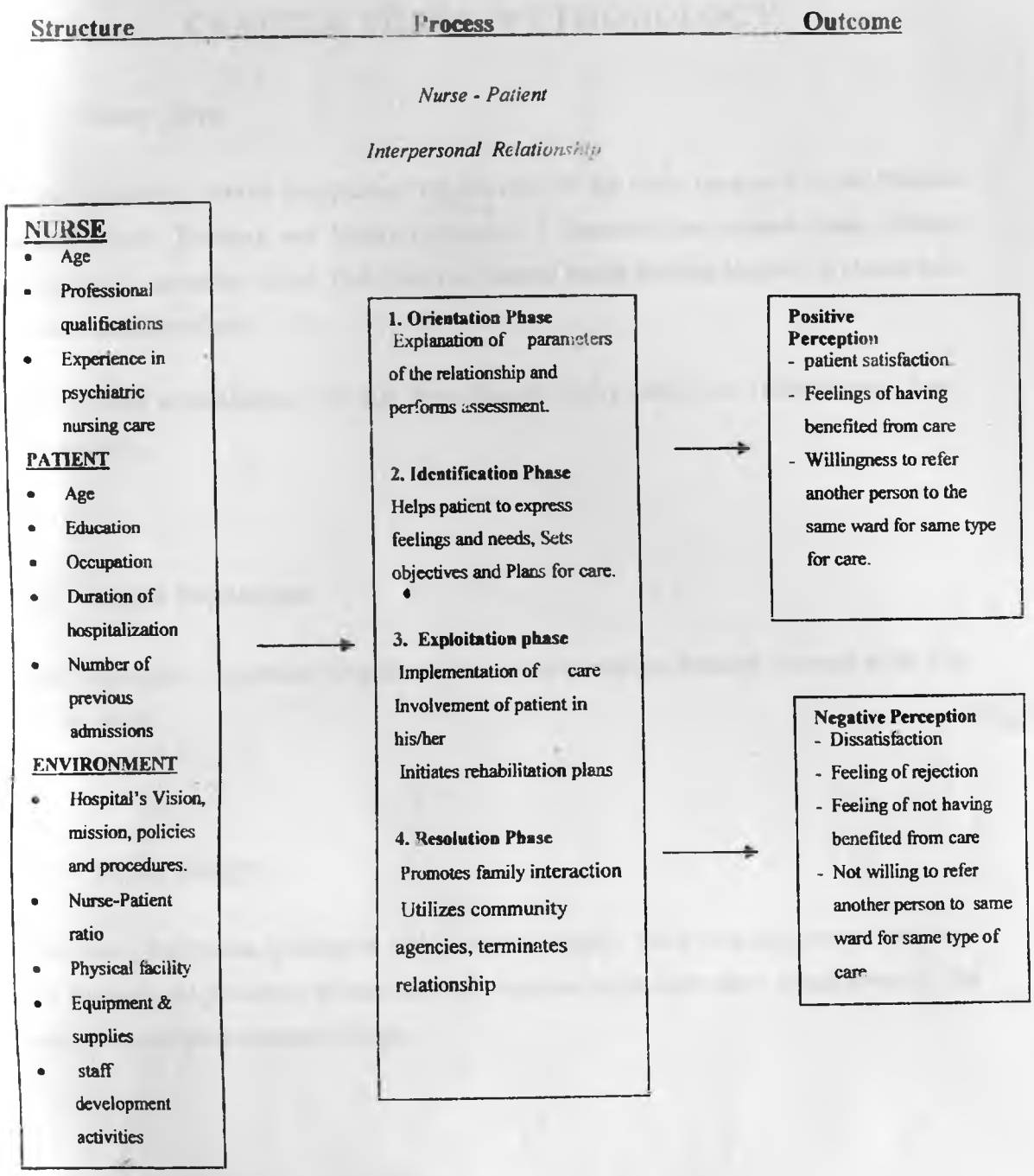

Figure 2: Conceptual framework for structure - process (nurse-patient) - outcome of care (adapted from Donbedian 1966).

CHAPTER THREE: METHODOLOGY

3.1 Study Area

Mathari Hospital, Nairobi was purposively selected for the study because it is the National Mental Health Teaching and Referral Hospital. It therefore has patients from different backgrounds across the nation. Being the only mental health training hospital, it should have the best facilities of care.

It is situated approximately 10 Km from Nairobi's city centre on Thika-Nairobi Road. (*Appendix* 4).

3.2 Study Population

Study population consisted of in-patients and nurses working in Mathari Hospital at the time of the study.

3.3 Study Design

This was a descriptive, qualitative and quantitative study. Since both exposure to structure and outcome and processes of care and their outcome were determined simultaneously, the study also used cross-sectional design.

3.4 Sample Size Determination

Sample size was calculated using the formula given by Kothari (2004) for estimating percentage of proportion of a finite population

$$n = \frac{Z^2.p.q.N}{d^2.(N-1)+Z^2.p.q}$$

Where n=desired population size

Z=standard normal deviation set at 1.96 for confidence level of 95%

P=proportion of target population estimated to have a particular characteristic. In this case, the particular characteristic was perception. Since there was no literature available on the estimate of proportion of nurses or patients with positive or negative perception, p for both nurses and patients was taken to be 50% as recommended by Kothari (2004).

q=1-p

d=degree of accuracy desired at 0.05 level of 95% confidence interval

N=the finite population from which sample was drawn. For patients at Mathari it was 596

Therefore the required minimum sample size for patients was estimated as follows;

$$\frac{(1.96)^2.(0.5).(0.5).(596)}{(.0.05)^2.(596-1)+(1.96)^2.(0.5).(0.5)} = \frac{572.3984}{2.458} = 234.5$$

However 236 patients were recruited into this study.

Sample size for nurses

The finite population from which the sample of nurses was drawn was based on nurses working on the wards at the time of research and was 193.The minimum sample size would therefore be;

The estimated sample $n = \frac{(1.96)^2.(0.5).(0.5).(193)}{(.0.05)^2.(193-1)+(1.96)^2.(0.5).(0.5)}$ n = 129

However 131 nurses were recruited into this study.

3.5 Sampling Procedure

3.5.1 The process of obtaining 236 patients

A sample frame of patients in the hospital was obtained from central registry using in-patient numbers. The wards were divided into three strata namely: the General civil wards, Maximum security unit and Private wards. The proportions of patients in these strata were worked out by dividing the number of patients in each stratum by total number of patient population in the hospital at the time of the study and multiplying results by 236 which was the estimated sample size. In each of these strata systematic random sampling was used to select the required number of patients until a total of 236 patients were obtained. Systematic random sampling from each stratum was calculated by dividing the total number of patients in the respective stratum (N) by the desired sample size of the stratum (n) to give k. Every kth patient on the list and eligible was included in the sample. Table I shows the proportion of patients as selected from their respective strata.

Table 1 Proportion of patients as selected from respective stratum

Strata	Patients Number Percent (%)	Totals
Private wards	24 (10.2 %)	61(10 %)
Maximum Security Unit	67 (28.4 %)	169(28%)
General civil side	145(61.4 %)	366(61%)
Totals	236 (100%)	596

3.5.2The process of obtaining 131 nurses

A sample frame of nurses on duty at the time of the study was obtained from the ACNO in charge of the hospital. Nurses were divided into two strata of enrolled (certificate) and

registered (diploma) levels. The ratio of registered nurses to enrolled nurses was calculated. Desired sample size for registered nurses was calculated by dividing their total number (53) by 193 which was the total nurse population and multiplying the results by 131 which was the desired sample size for all nurses. Similar procedure was followed to obtain sample size for enrolled nurses whose total number was 140. A total of 36 Registered nurses and 95 enrolled nurses were recruited into the study as shown in table 2 below.

Table 2 Proportion of Nurses from the respective stratum

strata	Nurses number/percent		Total
	Registered	Enrolled	
Private wards	8(22%)	25(26%)	33(25%)
Maximum security unit	9(25%)	27(28%)	36(27%)
General civil side	19(53%)	43(46%)	62(48%)
Total	36(100%)	95(100%)	131(100%)

3.6 Inclusion Criteria

3.6.1 Patients

1. Males or females of 18 years and above
2. In-Patients at Mathari Hospital at the commencement of study
3. In-patients who showed evidence of understanding study implications, had insight and could give reliable information according to the then current findings of the Mini Mental Status Examination of score 24 and above (*Appendix 5*)
4. Patients who met above criteria and willing to participate in study voluntarily.

3.6.2 Nurses

1. Qualified nurses both males and females on duty in Mathari Hospital at commencement of study.

2. Nurses working in the wards from which patient subjects were drawn.
3. Nurses willing to participate in the study voluntarily.

3.7 Data Collection Instruments

The study instruments used were questionnaires and checklists adapted with slight modification from Gigantesco (2003), Wallace (1999) and WHO (1994). These tools were modified to obtain a more integrated instrument to provide for reasons for patients' and nurses' responses so as to improve depth of information as opposed to the original tools.

Instruments' validity and reliability were pretested at Machakos District Hospital Psychiatric Unit due to its close proximity to Nairobi as well as being a training hospital. The instruments were amended after the pretest to make them more valid and reliable. The questionnaires were semi structured and were used to obtain information on the demographic characteristics of subjects, physical ward environment, administrative arrangements and staffing, care process and interaction between the nurse and patients' families (*Appendix 1and 2*). The checklist was also used to obtain similar information on subjects' respective wards (*Appendix*3).

3.8 Data collection procedure

Assistant Chief Nursing Officer in charge of the Hospital informed the Nurses in-charge of the wards to expect the researcher. At the Ward level, the researcher explained to the nurses the purpose and duration of the study. Nurse subjects were then identified through systematic random sampling. Subjects who met inclusion criteria filled respective consent forms (*Appendix7*).The nurses were then issued with self administered questionnaires (*Appendix 2*) that contained 32 questions to complete after which the questionnaires were collected back immediately to prevent loss.

The investigator identified patient subjects through systematic random sampling. Each patient was interviewed to ascertain his/her mental state using the Mini Mental State Assessment Tool (*Appendix 5*). Patients with score of 24 upwards were explained to the

nature of research and those willing to participate and met the inclusion criteria stated in 4.6.1 above filled consent forms. Hospital regulations regarding informed consent were also considered. The investigator interviewed patients using the questionnaire (*Appendix 1*), which contained 33 items.

The investigator used the checklist for observation to obtain information of the subjects' ward environment, administrative and staffing arrangements and care process. The investigator herself made observations on physical and process factors of care from the wards and held informal interviews with the nurses during the data collection period as necessary.

3.9 Data management and analysis

All filled in questionnaires were scrutinized for completeness and reliability of information obtained. Cleaned data was coded and stored immediately to minimize distortion and enhance objectivity. Qualitative data was analyzed thematically in line with study objectives. Data was summarized and presented in tables and pie charts.

Data input and analysis was done using SPSS Version 10. Proportions were calculated using total number of patients/nurses with positive perception verses those with negative perceptions. Differences in the proportions were determined by calculating the confidence interval and the Summary Chi Square Statistics p-values of ≤ 0.05 were considered statistically significant. Structure and process factors for care were identified and described. Their relationship with patients' and nurses' satisfaction with care was tested using chi square and the extent to which they contributed to patients' and nurses' satisfaction with care was described. Structure and process factors that contribute to positive perception and those that contribute to negative perception were analyzed and compared.

3.10 Ethical Considerations

The proposal was approved by Ethics Committees of Kenyatta and Mathari National Hospitals (*Appendix 8a)*. Authority to conduct research was obtained from Ministries of Education and Health (*Appendix8b and 8c*). Since mental disorder affects person's cognitive

functions, it was important to ensure that these functions were assessed first before a patient would participate in the study. Mini Mental Status Examination was therefore performed prior to recruiting a patient into the study. The tool for Mini Mental Status Examination measures the degree of cognitive impairment and takes only 5-10 minutes to administer. According to Kurlowicz and Wallace (2003), it has been validated and used extensively, since its creation in 1975, in clinical practice and research for psychiatric patients in a variety of settings including in-patients. Mentally ill patients have been found to have the capacity to provide consent by other researchers such as Moser, Schultz, Arndt *et al* (2002) who found that 80% of patients with schizophrenia demonstrated adequate capacity to consent for participation in Schizophrenia and HIV research.

The purpose of research was explained verbally and in written to subjects. Participation was voluntary through a written consent by subjects. Patient subjects signing consent were those with insight and had no evidence of cognitive impairment and understood the implications of research. Subjects were assured of confidentiality and anonymity was maintained for this purpose. It is important to note that all patients were willing to participate in the study and therefore none was excluded on the basis of consent although no incentives nor favours for participation or non-participation.

The researcher intends to present findings to the Ethics Committees of KNH and Mathari Hospitals, Mathari Hospital administration and the Director of Mental Health at MoH. The researcher also intends to present findings at Annual Nursing conferences and publish in the Scientific Journal of the National Nurses Association of Kenya.

CHAPTER FOUR: RESULTS

This chapter reports on the study findings based on quantitative and qualitative data obtained from 236 patients and 131 nurses at Mathari hospital, Nairobi during the months of May to end of June.

The chapter also presents the findings of the three hypotheses tested. The first hypothesis was to test if there was a relationship between structure factors and patient perception of care. The structures considered were demographic characteristics of the patients and physical environment of care. Satisfaction was used as an indicator of positive perception. Findings are presented in section 4.2 of this chapter.

The second hypothesis tested if there was a relationship between structure and nurses' perception of care. Structure factors tested against nurse satisfaction were nurses' demographic characteristics, physical environment of care and administrative arrangements and staffing. Findings are presented in section 4.5 of this chapter.

The third hypothesis was to test if the use of Interpersonal relationship assumptions of Peplau (1952) in the care process had influence on patients' and nurses, perception of care. Findings on selected process factors tested against patients' and nurses' satisfaction with care are presented in Sections 4.3 and 4.6 respectively.

4.1 Demographic Characteristics of Patients

4.1.1 Age and gender distribution

A total of 236 patients were interviewed. The population was largely young with 167 (74%) aged 39 years and below. Their ages ranged from 19-69 years. The age group of 20-29 had the highest number of patients108 (45.8%) while 60-69 years age group had the least 6 (2.54%).

In terms of gender, males were 167 (70.8%) more than twice the number of females 69 (29.2 %) as shown in Table 3.

4.1.2 Marital Status

From Table 3, we observe that more than half 135 (57.2%) of the patients' population were single while the married were 76 (32.2%), divorced 19(8.05%) and widowed were only 5(2.12%)

4.1.3 Education

Although the majority of respondents 221(93.6%) had formal education. only 37(15.7%) of them had tertiary level of education. A small number 15(6.36%) of the patient population had no education (see Table 3). These findings are similar to the KDHS (2003) report that most of the Kenyan population had some formal education.

4.1.4 Occupation

A total of 108 (45.77%) patients were self-employed either as agriculturalists or businessmen. Other forms of employment accounted for 51 (21.61%). Students were 28 (11.86 %,) formal professional employment comprising of teachers, heath professionals and administrators were 26(11.02 %). Only 23(9.75%) were unemployed (see Table 3 below)

4.1.5 Residence

Despite Mathari hospital being within Nairobi district, about three quarters174 (74%) of the patients in the study were from outside Nairobi province with only a quarter 62 (26%) of them coming from Nairobi province probably reflecting its referral nature (Table 3 below).

4.1.6 Duration of stay

Although 87 (36.9%) of the patients had been in the ward for only 0-1week, 52 (22 %), had stayed in the ward for 8weeks and above, 48 (20.3%) had stayed for 2-3 weeks. Those who were 6-7 weeks old in the wards were 32(13.6%) while patients who had stayed for 4-5weeks were the least with 17 (7.2%). In addition, 108 (45.8%) of the patients had been admitted to the same wards previously. Of these previous admissions, 60 (25.4%) had been admitted at least twice while 47 (19.9%) had been admitted once.

Table 3 Demographic characteristic of patients

CHARACTERISTICS	Total (%)
Age Group in years	
10-19	13 (5.51%)
20-29	108. (45.76%)
30-39	54 (22.88)
40-49	44(18.64%)
50-39	11(4.66%)
60-69	6(2.54%)
Gender	
males	167(70.78%)
Female	69(29.24%)
Marital status	
Married	76(32.20%)
Single	135(57.20%)
Divorced	19(8.05%)
Widowed	5(2.12%)
Others	1(0.42%)
Education	
None	15(6.36%)
Primary	87(36.86%)
Secondary	97(41.10%)
College	25(10.59%)
University	12(5.08%)
Residence by District	
Nairobi	62(26.27%)
Others	174(73.75%)
Occupation	
Teacher	7(2.97%)
Administrator	15(6.36%)
Businessman	50(21.19%)
Agriculture	58(24.58%)
Health professionals	4(1.69%)
Student	28(11.86%)
Unemployed	23(9.75%)
others	50(21.61%)

4.2 Structure factors that influence Patients' perception of quality In-patient psychiatric nursing care.

4.2.1 Patients' perception of care.

Patients' satisfaction with care was taken as a measure of a positive perception. To test for satisfaction, question thirty in the patients' questionnaire was asked. It required patients to indicate if they were satisfied or not satisfied with the care they received in the ward. Slightly more than half (57%) of patients were satisfied with the care. Some of the reasons given for satisfaction included caring nurse characteristics (42.8%) and availability of drugs (33.5%). Reasons for dissatisfaction included poor ward hygiene (13%) and poor quality and quantity of food (12.3%)

4.2.2 Demographic factors and patients' satisfaction

When satisfaction was matched with demographic characteristics of patients, there was no significant relationship at $p \leq 0.05$ as shown in the table 4 below

Table 4 Demographic factors and patient's satisfaction

Variable	Level Satisfaction				
DEMOGRAPHICS	No. satisfied N=124 (%)	No. not satisfied N=112 (%)	Chi square	df	P value
Age Group:					
>= 40 years	29.0	22.3	1.4	1	0.2
Gender:					
Males	71.0	70.5	0.005	1	0.9
Marital status					
Married	54.03	60.71	1.073	1	0.30
Education level					
Secondary and above	59.68	53.57	0.89	1	0.34
Occupation					
Professionals	12.90	8.93	0.95	1	0.33

4.2.3 Physical environment and patients' satisfaction

When satisfaction with care was looked at against physical environment, being happy with the way the ward looks was found to be significantly related to satisfaction (X^2=5.506, p=0.002) as shown in table 5 below

Table 5 Physical environment and patients' satisfaction

Variable	Level Satisfaction				
STRUCTURE	No. satisfied N=124 (%)	No. not satisfied N=112 (%)	Chi square	df	P value
Happy with the way the ward looks	57.26	41.96	5.506	1	0.002
Ward providing privacy when bathing	69.35	66.96	0.155	1	0.69
Ward providing privacy when dressing	67.74	69.64	0.099	1	0.753

4.3 Process factors that influence patients' perception of quality

In- patient psychiatric nursing care

A number of process factors were significantly related to patients' satisfaction with care as observed in Table 6 below. Happy with attention from nurses(X^2=3.71, p=0.05), Nurses listening to patients when talking with them (X^2=7.58, p=0.006), Nurses providing patients with information about patients' sickness to satisfaction (X^2=4.84,p=0.028), Nurses providing patients with information on medicines patients take (X^2=10.50,p=0.0012) Participation in ward activities (X^2=10.97,p=0.0009) and Access to recreational facilities (X^2=11.13,p=0.0008).

Table 6 process factors and patients' satisfaction

Variable	Level of Satisfaction				
PROCESS	No. satisfied N=124 (%)	No. not satisfied N=112 (%)	Chi square	df	P value
Happy with attention from nurses	87.90	78.57	3.71	1	0.05
Nurses listening to you when talking with them	54.03	71.43	7.58	1	0.006
Nurses provide you with information about your sickness to your satisfaction	32.26	19.64	4.84	1	0.028
Nurses provide you with information on medicines you take	32.26	14.29	10.503	1	0.0012
Nurses discuss progress with you to your satisfaction	23.39	22.32	0.038	1	0.846
Participation in ward activities	33.87	15.18	10.966	1	0.0009
Access to recreational facilities	15.32	2.63	11.130	1	0.0008
Involvement in your care	37.9	30.36	1.487	1	0.223
Ever had a meeting between you, nurse and relative	51.6	41.07	2.631	1	0.105
Given information about care after discharge	87.	82.14	1.111	1	0.29

Satisfaction with care was found to have a significant relationship with ability to recommend someone for care to the same ward About 71.0% of the patients who were satisfied with care would recommend someone to the same ward for admission while 58.0% of those who were not satisfied with care would not recommend someone to the same ward and this was significant. (χ^2= 20.2, p=0.0001) as shown in Table 7 below

Table 7 Recommend someone for admission by Satisfaction with nursing care

Recommend someone for admission	Satisfied with nursing care		Total
	Yes	No	
Yes	88(71.0%)	36(29.0%)	**124**
No	47(42.0%)	65(58.0%)	**112**
Total	**135**	**101**	**236**

χ^2= 20.2 df= 1 pvalue=0.0001

4.4 Demographic Characteristics of Nurses

4.4.1Age Distribution of nurses

Majority of nurses 101(77.1%) were of age 30 to 49 years with only 11(8.4 %) forming the age group of 20-29years.The minimum age was 21 years while the maximum age was 54 years with a mean age of 39±7.7(Table 8)

4.4.2 Gender

It was noted that the number of female nurse respondents was 96 (73%) more than twice (27%) of the male nurses (Table 8). This gender distribution may be explained by the evolution of nursing as a profession for women

4.4.3. Marital status

Most of the nurse respondents were married 117(89.31%) while the unmarried were only 14 (10.69%)

4.4.4 Professional Qualifications

Among the nurse respondents 69 (53 %) were psychiatric trained among whom 46(35%) were KPEN and only 23 (18 %) were KRPN. The rest 62 (47%) were non-psychiatric trained nurses (Table 8)

Table 8 Demographic characteristics of Nurses

CHARACTERISTICS	TOTAL (%)
Age in years:	
Mean±SD	39.3±7.7
Range	21 - 54
Age Group in years	
20-29	11
30-39	49
40-49	52
50-59	19
Gender	
Male	35(26.72%)
Female	96(73.28%)
Marital status	
Married	117(89.31%)
others	14(10.69%)
Qualifications	
KRPNs	23(18%)
KEPNs	46(35%)
Others	62(47%)

4.4.5 Duration of Practice

Duration of psychiatric practice in Mathari Hospital ranged from 2- 12 years with slightly less than half (48.1%) of the patients having worked in the Hospital for six and above years. It was observed that inter ward transfer for nurses was not a common occurrence as only 35.5 % of the nurses had worked in four and above wards despite the fact that almost half of the nurses had stayed in the Hospital for more than six years .This implied that some nurses worked in the wards whose environment they did not like for a long time; a factor that could negatively affect the quality of care they provided.

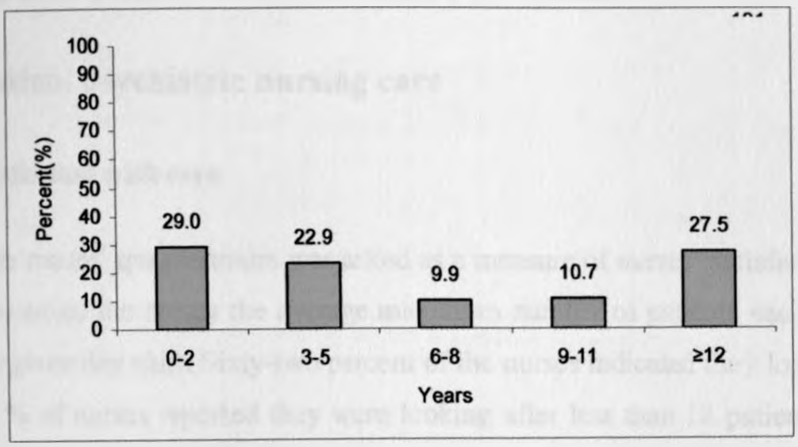

Figure 3 Nurses duration of practice in Mathari Hospital

4.4.6 Continuing Medical Education Courses attended by Nurses at Mathari Hospital

The study indicated that about 60(46%) of nurses had attended psychiatric related courses/updates compared to12. (9%) who had attended non-psychiatric courses and 59(45%) had not attended any course at all (Figure 4).

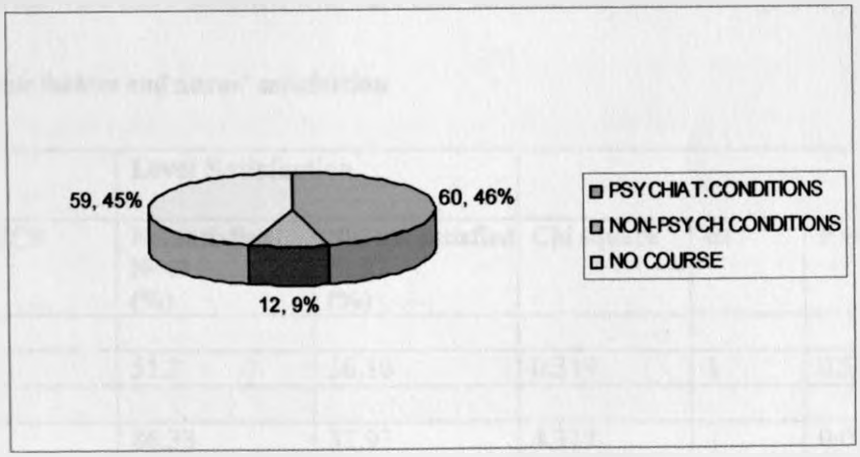

Figure 4: CME courses attended by nurses at Mathari hospital

4.5 Structure Factors That Influence Nurses Perception of Quality In-patient psychiatric nursing care

4.5.1 Nurse satisfaction with care

Question 16 on the nurses' questionnaire was asked as a measure of nurses' satisfaction with care. The question asked the nurses the average maximum number of patients each of them looked after per a given day shift. Sixty-two percent of the nurses indicated they looked after ≥19 patients, 38. % of nurses reported they were looking after less than 18 patients. When asked if they were comfortable looking after the number of patients they had indicated, 62.6% of nurses said they were not comfortable. Nurses preferring a patient ratio of ≤ 18 were 84% out of whom57.3% preferred a patient ratio of 1:12 per a nurse. The researcher argued that if a Nurse was allocated more patients than he/she was comfortable with during a shift then, care would not be satisfactory. This would imply that 62.6% were not satisfied with care they were giving to patients.

4.5.2 Demographic factors and nurse satisfaction

When tested against the demographic characteristics of nurses, gender and marital status were related to satisfaction with care (X^2=4.317, p= 0.038; X^2= 4.838=0.028) respectively. Males and the married were more satisfied with care than females and unmarried. (table9)

Table 9 Demographic factors and nurse' satisfaction

Variable	Level Satisfaction				
DEMOGRAPHICS	No. satisfied N=49 (%)	No. not satisfied N=82 (%)	Chi square	df	P value
Age					
≥ 40 years	51.2	56.10	0.319	1	0.573
Gender:					
Males	86.33	32.93	4.317	1	0.038
Marital status					
married	81.63	93.61	4.838	1	0.028
professionals					
Psychiatric nurses	42.86	58.54	3.025	1	0.0

4.5.3 Physical environment and nurses' satisfaction

When satisfaction was tested against the physical environment there was a significant relationship. Nurses who approved of the physical environment were more satisfied with the care as shown in table 10 below

Feelings about the lay out of the ward the nurse was working (X^2=10.456, p=0.0012), Feeling safe working in the environment (X^2=12.570, p=0.0004) and Ward providing adequate space for administrative duties (X^2=8.978, p=0.003)

Table 10 Physical environment and nurses' satisfaction

Variable	Level Satisfaction				
STRUCTURE	**No. satisfied N=49 (%)**	**No. not satisfied N=82 (%)**	**Chi square**	**DF**	**P value**
Physical environment					
Do you like the lay out of the ward you are working in currently?	83	56.1	10.456	1	0.0012
Feeling safe working in this environment	89.80	60.98	12.570	1	0.0004
Ward provides adequate space for administrative duties	85.71	60.98	8.978	1	0.003

4.5.4 Administrative arrangements and staffing and Nurses' satisfaction

With regards to administrative factors that affect nurses' satisfaction with care, the only relationship identified was between happiness with duration of patients' transfer within the hospital and nurses' satisfaction. The majority (71.43%) of the nurses were happy with duration taken to transfer a patient from one ward to another within the hospital and were also satisfied with the care(X^2=7.824, p=0.005) (Table11 below). Reasons given by nurses who were not happy with duration of stay included lack of transport, inadequate number of beds in the admitting wards and staff to accompany patients. Nurses on Maximum Security Unit reported long court procedures and social stigma as major reasons causing delayed transfer of patients out of the hospital .It was noted, however, that patients who required emergency care were generally transferred within a shorter time of less than 2 hours.

Table 11 Administrative arrangements and staffing and nurses' satisfaction

Variable	Level Satisfaction				
Administrative arrangements and s	**Number satisfied N=49 (%)**	**Number not satisfied N=82 (%)**	**Chi square**	**df**	**P value**
Feeling competent looking after these patients given the current the current knowledge	34.64	26.83	0.907	1	0.341
Willingness of superior to listen to you when you ha ve problems	81.63	90.24	2.014	1	0.156
Prompt availability of other professionals when required	51.02	52.44	0.025	1	0.87
Happy with duration of patients' transfer within the hospital	71.43	46.34	7.824	1	0.005
Happy with duration of patient transfer outside the hospital	59.18	48.78	1.332	1	0.248

4.6 Process factors That Influence Nurses' Perception Of Quality Of Inpatient Psychiatric Nursing Care

From table 12 below, we observe that nurses who had adequate time to discuss patients' condition with relatives and those who involved patients' relatives in patients' care were more satisfied with care and these were significant ($X^2$6.179, p=0.013and $X^2$8.129 p=0.004)respectively.

Table 12 process factors and nurses satisfaction

Variable	Level Satisfaction				
PROCESS	No. satisfied N=49 (%)	No. not satisfied N=82 (%)	Chi square	df	P value
Enjoy working the patients	85.71	84.15	0.058	1	0.809
Discussing patient treatment ward doctor	85.71	84.15	0.0581	1	0.809
Holding ward meetings to evaluate care of patients	87.76	87.80	0.0001	1	0.993
Ever have adequate time to discuss with relatives care of their patients	85.71	65.85	6.179	1	0.013
Involvement of patients; relativ care activities	91.84	70.73	8.129	1	0.004
Performing home visit before is discharged	22.45	24.39	0.006	1	0.800

4.7 Perception of nurses and patients on selected structure and Processes factors of care

4.7.1 Physical environment on patients and nurses satisfaction

We observe from tables 5 and 10 discussed previously that approving the physical appearance of the ward was significantly related to both patient and nurses satisfaction with care (X^2=5.50, p=0.002 and X^2=10.456, p 0.0012) respectively

From table 13 below we note that more nurses (66%) approve the physical appearance of the ward than the patients (50 %).some of the reasons advanced by patients for disapproving the ward incude; dining place and kitchen which were not good (61%).Whereas the patients felt the wards were too enclosed, nurses saw this as protective against absconding.

About seventy two percent of the nurses would recommend someone for admission to the ward while only half of the patients would. Both patients (31%) and nurses (45%) valued the benefit of treatment received and gave this as their main reason for recommending someone. Thirty three percent of patients reported availability of drugs as the reason for recommending someone, further confirming their feelings on the importance of therapeutic benefit received as contributing to recommendation of the ward for care.

Table 13 comparison of nurses and patients perception on selected structure and process characteristics

Structure and process factors	No. of nurses	No. of patients
Approving physical appearance of the ward	87(66%)	118(50%)
Patients involvement in their own care	147(62.3%)	Not directly asked
Availability of other professionals when care is required	68(51.9%)	110(46.6%)
Meeting with nurse, patient and relatives to discuss care	96(73.3%)	101(42.8%)
Ability to recommend someone the same ward for care	94(71.8%)	124(52.5%)

4.7.2 Care process

It can be observed from table 13 that whereas73 .3% of the nurses reported having discussed patients' condition with relatives, only 42.8% of patients approved of such a discussion and only23.39 %(table 6) were satisfied with information they received about their progress while 32.2% (table6) of the patients reported having received information on their prescribed medicines; Yet 78.6 % of the nurses reportedly had involved patients' relatives in patient care activities which mostly included supervision of treatment.

4.8 Structure and Processes factors based on checklist findings

4.8.1 General description of wards

Using the modified checklist from WHO (1993) the researcher found out the following from the wards at Mathare hospital. The total number of wards was 14.There were four private wards of which only one was exclusively for females. One private ward was for both females and males while the remaining two were for males alone. The general non-private wards on the civil side were six out of which two were for females and four were for males. On the Maximum security unit, there were a total of four wards two of which were for males, one for females and one was mixed (males and females) for the physically sick patients who cannot be cared for adequately in their respective psychiatric wards irrespective of their civil or criminal state.

When checked against the physical environment, administrative and staff arrangements, and care process. Most of the wards met the WHO criteria of fair quality as shown in table 16 below. According to WHO (1994) good quality is considered for a score of 80%, fair quality is between 60%and 79% barely acceptable is 40 to 59% and unacceptable is below 40%.

Table 14 Wards quality scores against physical environment, administrative and staff arrangements and care process checklist by researcher

SCORE	NUMBER
Good quality	4 (29 %)
Fair quality	9 (64 %)
Barely acceptable	1 (7%)
Unacceptable	0 (0%)
T0tal	14 (100%)

4.8.2 Findings on Physical environment and supplies

It was observed that many of the wards, 9 out of 14(64.3%) had sufficient ward space. Although 11 out of 14 (78.6%) had adequate space for recreational activities less than 20% of the patients had access to recreational facilities all the time .This was because most of the facilities were only available in occupational therapy departments . Reasonable privacy for relevant bodily functions was observed in 8 out of 14 wards (57.1%). However, it was noted that the wards lacked adequate space for important activities. Space for specific treatment procedures was only available in 3 out of 14 wards (21.4%), Reasonable space for receiving visitors was available in 5 (55.7%) wards and adequate and appropriate seats for patients were only available in 4(28.6%) wards. Adequate lighting was reported in only 5(35.7%) of the wards. Table 15 summarizes findings on physical environment.

Table 15: Summary of findings on patients' physical environment and supplies in the wards at Mathari hospital

Physical environment	Yes	No
Facility checked and meets local standards	6(42.9%)	8(57.1%)
The ward space is sufficient	9(64.3%)	5(35.7%)
Adequate space for specific treatment procedures	3(21.4%)	11(78.%)
Adequate space for recreational activities	11(78.6%)	3(21.4%)
Reasonable space for receiving visitors	5(35.7%)	9(64.3%)
Acceptable place for patients to store their personal belongings	5(35.7%)	9(64.3%)
Toilets are in good working order for all patients	6(42.9%)	8(57.1%)
A reasonable daily supply of water is available	12(85.7%)	2(14.3%)
There is reasonable privacy for relevant bodily functions	8(57.1%)	6(42.9%)
The ward has adequate lighting	5(35.7%)	9(64.3%)
The ward is clean	11(78.6%)	3(21.4%)
Sufficient and appropriate bedding is available	6(42.9%)	8(57.1%)
Patients have adequate and appropriate seats	4(28.6%)	10(71.4%)
Patients have sufficient and appropriate eating utensils	4(28.6%)	10(71.4%)
Adequate supply of basic general drugs are available at all times	9(64.3%)	5(35.7%)
Ward has adequate supply of basic psychiatric drugs	12(85.7%)	2(14.3%)
A first aid kit is available in the ward	10(71.4%)	4(28.6%)
All potentially dangerous drug are stored safely from patient's r	10(71.4%)	4(28.6%)
The ward has trays for basic nursing procedures at all times	2(14.3%)	12(85.7%)
The facility kitchen complies with recommended local standards for hygiene and food service	2(14.3%)	12(85.7%)

4.8. 3 Findings on Administrative arrangements and staffing

From table 16, which gives a summary of findings on administrative arrangements and staffing, an important observation is that all nursing staff was on full time employment, and that in all the wards there was free flow of communication where subordinates discussed with their superiors problems encountered in the course of duty. However observations of major concern to the researcher were that no ward had written procedures on specific guidelines on

side effects of the drugs to record, procedures to be followed when dealing with complaints from patients and relatives and no written policy on continuing staff education.

Table 16: Summary of findings on administrative arrangements and staffing Mathari hospital

Administrative arrangement	Yes	No
Evidence of Hospital's mental health policy is available in the ward	3(21.4%)	11(78.6%)
At least two-thirds of the care givers in the ward are employed full-time	14(100%)	0(0%)
Staff are provided with room to be away from patients at appropriate periods during the day	7(50.0%)	7(50.0%)
Staff are provided with time to be away from patients at appropriate periods during the day	8(57.1%)	6(42.9%)
Written procedures for protection of confidentiality of patients' records are available	7(50.0%)	7(50.0%)
Written records are appropriately maintained for all patients	4(28.6%)	10(71.4%)
Written procedures to be followed when dealing with complaints from patients and relatives are available	0(0%)	14(100%)
Written policy on continuing staff education	0(0%)	14(100%)
All c are giving staff are trained on emergency and trauma care	4(28.6%)	10(71.4%)
All nurses are trained on basic psychiatric nursing skills	7(50.0%)	7(50.0%)
Staff have been trained specifically on managing psychiatric emergencies	8(57.1%)	6(42.9%)
Specific guidelines on side effects of the drugs to record are available	0(0%)	14(100%)
Opportunities are provided for nurses to discuss with their superiors any difficulties experienced in the course of duties	14(100%)	0(0%)
Annually, nurses conduct an internal audit to identify strengths and weaknesses in the wards policies and programme	10(71.4%)	4(28.6%)

4.8.4 Findings on Care Process at Mathari Hospital

From table 21 below, we can observe that more than half of the wards met at least 11 out of 22 items of care process. In 13(92%) of the wards patients were made to feel welcome on admission. Help was quickly available incase of violence by a patient in 12(85.7%), patients were encouraged to take suitable work for their benefit in11 (78.6%) and in 12. (85.7%) wards patients' relatives were instructed on care of a patient when relapse occurred at home.

Although the wards generally performed well in the care areas stated above, None of the wards except one (7%) had evidence of performing full medical examination on a patient in the first 24 hours of admission., 3(21.4%) wards reported that their acute patients had

medical evaluation everyday yet there was no documented evidence. Only 4(28.6%) wards provided suitable food that met minimum requirements for patients with special nutritional needs. Interviews with nutrition officers at the hospital confirmed that there was shortage of special diet. Table 21 gives a summary of findings on care process

Table 17: Summary of findings on care process in the wards at Mathari hospital

Care process	Yes	No
Newly arrived patients are made to feel welcome on admission	13(92.9%)	1(7.1%)
Staff speaks frequently to patients and always in a friendly, positive and courteous manner.	10(71.4%)	4(28.6%)
There is adequate attention to personal appearance for those unable to care for themselves	5(35.7%)	9(64.3%)
Meals served to patients meet recommended minimum nutritional requirements	7(50.0%)	7(50.0%)
Suitable food is provided for those with special nutritional needs	4(28.6%)	10(71.4%)
Every newly admitted patient has full medical examination in the first 24 admission	1(7.1%)	13(92.9%)
Acute patients have a medical evaluation at least every day	3(21.4%)	11(78.6%)
Chronic patients have a medical evaluation at least every month	7(50.0%)	7(50.0%)
An informed consent is obtained prior to starting a planned treatment	7(50.0%)	7(50.0%)
There are clear written guidelines on the indications of use of drugs therapies	0(0%)	14(100%)
There are clear written guide lines on procedures to be followed by all management of psychiatric emergencies	4(28.6%)	10(71.4%)
There clear guidelines on use of electroconvulsive therapy	0(0%)	14(100%)
Treatment plans are written down for all patient and followed by all staff	9(64.3%)	5(35.7%)
Meetings are held once every month for staff to discuss care plans for individual patients	9(64.3%)	5(35.7%)
Patients are kept informed about their own progress	9(64.3%)	5(35.7%)
Help and support are quickly available if violence breaks out	12(85.7%)	2(14.3%)
Staff have access to specialist medical help in case of an emergency	4(28.6%)	10(71.4%)
Patients are encouraged to take up suitable and useful work for their benefit	11(78.6%)	3(21.4%)
No patients are kept locked in individual rooms.	6(42.9%)	8(57.1%)
There are written procedures for restrains and staff strictly follow them.	3(21.4%)	11(78.6%)
Patient's privacy is observed during all procedures	6(42.9%)	8(57.1%)
Patients are treated with respect at all times	5(35.7%)	9(64.3%)
Patient's information is held in confidence at all times	8(57.1%)	6(42.9%)
Discharge and follow up	**Yes**	**No**
Nursing staff discuss discharge plans with respective patients	9(64.3%)	5(42.9%)
Upon discharged patients are thoroughly oriented in terms of follow up and social services available in their community	9(64.3%)	5(42.9%)
When a patient is discharged ,family members are instructed about measures to take in case of relapse or reappearance symptoms	12(85.7%)	2(14.3%)
Upon discharge ,a standard information form is sent to the health facility responsible for follow up	11(78.6%)	3(21.4%)

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Demographic characteristics of patients

Despite Mathari Hospital being in Nairobi province, only 24 % of the patients were from within Nairobi probably reflecting its referral nature. The majority of the patients (87%) were in the age group of 20-49 (table 3). This scenario could support WHO (2003b) report that psychiatric morbidity is maximal in young adults who make up the most productive section of the population. It could also be due to the comparatively young age structure of the Kenyan population as reported in the KDHS (2003).

Fourty-three percent of the patients were more than one month old in the ward at the time of the study. Of the patients with previous admissions (45.8%), 25.4% had been admitted in the same ward more than twice. This reflects the chronic nature of mental disorders as reported by WHO (2003a). The chronic nature of mental disorders coupled with its prevalence among the most productive group could contribute greatly to poverty in Kenya where already more than half of the population is considered poor (living on less than one dollar a day) Loss of employment could be as a result of long periods of hospitalizations and may explain the reason why only 11.1% of the patients were in professional formal employment, 45.8% in self employment and 10.9% in other forms of employment and unemployed in this study. The finding is similar to reports by WHO (2003a) and Goldberg, Gask and Jenkins (2001) that the chronic nature of mental disorders with repeated episodes of care lead to loss of employment, reduced productivity and disability.

Mental illness also seems to interfere with the education of the young population due to its incidence in children and young adolescents and long hospitalizations and could explain why more than three quarters (78.0%) of patients only had primary and secondary education. This implies that they not only fall out of school, but may also not get into high employment opportunities to take part in decision making organs so as to lobby for decisions that favour them.

The prevalence of mental disorders in adolescents was also reported by WFMH (2003) in 10-20% of the youths globally, nearly 21% of children in USA and 39% of children aged 12-15 years in Greece. In addition the WFMH report states that mental disorders account for 5 of the top 10 leading causes of disability in the world for children of 5 years and above.

5.1.2 Structure factors and patients' perception of care

Structure factors that were related to patients' perception of care included physical environment. Being happy with the way the ward looked was significantly related to satisfaction with care (X^2=5.506, p=0.002) and with recommending someone for admission to the same ward (X^2=20.2, p=0.019). Satisfaction with care used in this study framework as an indicator of positive perception, and is an outcome of quality.

In -patient psychiatric nursing care has also been used by other researchers in the same way. Barker and Orrell, 1999; Huber, 2001; and Hildenhovi and Laippala 2001, considered client satisfaction as an important evaluator of care. The relationship between physical environment and patient satisfaction with care was reported in studies done by Garry and Shannon (1997) and Sixma and Kersens (1998). According to them, good environmental characteristics such as clean and attractive rooms with recreation and privacy contributed to patients' satisfaction with care. In this study, privacy was not found to be significantly related to satisfaction. Probably this could be because male and female patients are admitted to different wards hence the reduced need for privacy among members of the same sex. It could also be due to the high population of young patients (73.15% of patients ≤ 39 years; Table 7) who do not have high regard for privacy. The low regard for privacy is supported by a higher number of patients (68.64%) approving privacy than the checklist finding (57.5%) It could also be due to the large population of males (70.78%) who culturally are less sensitive to privacy. It could also be due to the few numbers of patients used in this study since in the above mentioned studies large numbers of patients were involved. For example, Rossberg and Friis (2004) whose study indicated that ward atmosphere was the most important factor in patients' satisfaction used a sample size of 424 patients almost twice the sample size in the current study.

5.1.3 Process factors and patients' perception of care

A number of process factors were significantly related to patients' satisfaction with care as observed in table 6. Happy with attention from nurses (X^2=3.71, p=0.05), Nurses listening to patients when talking with them (X^2=7.58, p=0.006), Nurses providing patients with information about sickness to Patients' satisfaction (X^2=4.84,p=0.028), Nurses providing patients with information on medicines patients take (X^2=10.50,p=0.0012) Participation in ward activities (X^2=10.97,p=0.0009) and Access to recreational facilities (X^2=11.13,p=0.0008). When these process factors were present, patients were more satisfied with care. Satisfaction with care was found to have a significant relationship with ability to recommend someone for care to the same ward. About 71.0% of the patients who were satisfied with care would recommend someone to the same ward for admission while 58.0% of those who were not satisfied with care would not recommend someone to the same ward and this was significant. (χ^2= 20.2, p=0.0001) as shown in Table 7. These process factors identified as having significant relationship with care had been identified as the characteristics of a therapeutic interpersonal relationship by Peplau (1952).The process factors have also been reported by other researchers as contributing to satisfaction with care. Duffy and Hoskins (2003) reported that the process of caring, an essential ingredient of Interpersonal relationship, is highly linked to positive patient outcomes whose indicator in this current study is satisfaction. Williams and Susans (1998) and Arja *et al* (2003) reported factors that led to patients' dissatisfaction with care. Some of the factors they reported include inadequate information on patients' condition, treatments, and lack of patient involvement in their care and inadequate contact especially on a one- to- one basis.

Although according to this study, attention given to patients by the nurses was above 80%, patient involvement in activities was above 90%, and patients were happy with the way nurses listened to them (84%), patients also wanted to be informed about their sickness, they valued feed back of their progress and care they would be given after discharge and this could have accounted for 42.8% of patients who were dissatisfied with care. even though the scores on other characteristics of the nurses were high. The scores on these processes were very low. Information about medicine being taken was given to 32.2% of patients. Only 26.3% of the patients were satisfied with information they received about their sickness and 25% reported being satisfied with the discussion on progress. According to Peplau (1952), these process factors are important components in exploitation and resolution phases of nurse –patient interpersonal relationship, used as the process in the current study framework.

Nurses' poor performance in these process areas could be due to the low nurse: patient ratio that did not allow them adequate time for one -to -one interaction, (62% of the nurses reported nurse: patient ratio of 1:≥19).

5.1.4 Demographic characteristics of Nurses

A total of 131 nurses were selected by stratified procedure. Stratification was according to professional training of Diploma and Certificate levels. These two categories of nurses were obtained from all wards.

Nursing seems to be gender biased with 73.3% of nurse respondents being females. Female domination in nursing is probably associated with the evolution of nursing as a women's profession.

Although this is a national referral and training hospital requiring only psychiatric nurses, it was observed that more than half 62 (47%) of the nurses had not gone through the post basic course in psychiatry. Kenya Registered Psychiatric Nurses who are supposed to be nurse managers and supervisors of Psychiatric nurse students were only 23(18%) while EPNs were 46 (35%). This implies that most of the specialized psychiatric care and students' supervision is performed by "unqualified" nurses. This scenario supports reports by WHO (2003, 2003a) that Mental Health Services are under resourced which greatly compromises care of psychiatric patients. Shortage of trained psychiatric nurses is likely to get even worse since students enrollment records into the course show a downward trend (Brown and Lo, 1998).Appendix 8 shows this downward trend.

5.1.5 Structure factors and nurses' perception of care

5.1.5.1 Demographic characteristics

The study found out that nurses' characteristics influenced their perception of care. Male and married nurses were more satisfied with care than females and unmarried. Most males (86.33%) were satisfied with care and this was significant (X^2=4.317, p=0.038).Significantly more of the married nurses (81.63%) were satisfied with care (X^2=4.838, p=0.028).

5.1.5.2 Physical environment

The relationship between physical environment and nurses' satisfaction was highly significant. Nurses were more satisfied with care if they worked in the ward whose physical lay out they liked (X^2=4.317, p=0.038), perceived as safe (X^2=412.570 p=0.0004) and had adequate space for administrative duties (X^2=8.978, p=0.003).These findings are similar to the ones by Ito and Eistein (2001) in which nurses who were dissatisfied with care reported serious concerns about poor physical environments for care and lack of basic necessities for safety, privacy, dignity and comfort.Rossberg and friis (2004) also reported a positive correlation between ward atmosphere and staffs' satisfaction with care. Observations from the checklist indicated that more than half of the wards met the WHO requirements on these physical components (Table 15). This could explain why the physical components of the environment were highly approved by the nurses as shown in Table 10.

5.1.5.3 Administrative arrangements and staffing

Of the structure components that were tested, only administrative arrangements that facilitated quick transfer of patients within the hospitals when required was significantly related to nurses satisfaction (X^2=7.824, p=0.005).Gillies (2003) found that nurses satisfaction was increased when there was good communication among nurses and between nurses and other disciplines and working under an understanding leader.

Feeling competent, willingness of superior to listen to subordinates and support from other professionals which were related to nurses satisfaction in many studies Gillies (1994), were not found significant in this study. Probably other statistical tests could have been more appropriate.

5.1.6 Process factors and Nurses' perception of care

These components were selected because they characterize phases of Peplau's interpersonal relationship theory of 1952. Two of them were found to be significantly related to nurses' satisfaction. Having adequate time to discuss with relatives care of their patients was significant (X^2=6.179,p=0.013). Discussing with relatives about their patient starts at the exploitation phase. It is necessary for implementation of care and initiation of rehabilitation plans. If it is done successfully according to Peplau,it prevents relapse. It has also been used

in the resolution phase to promote family interaction, and identify useful community resources.

Involving patients relatives in any care activities was highly significant (X^2=8.129, p= 0.004). This activity is used in phase four of the relationship to prepare patient and their relatives for care at home. Most of the times relatives are involved in ensuring that their patient complies with treatment and follow-up care. Although 94.84% of nurses reported they were performing these important activities, patients were not fully involved. This is because only about 35% of patients and less reported having had any discussion or useful information about their sickness.

William (1998) and Arja *et al* (2003) support Peplau's (1952) view in the importance of involving patients and relatives in their care. According to them, patients and their relatives need to be given adequate information about treatment and need to be involved in the planning of their care.

5.2 **Limitation of the study findings**

1. Some patients were not able to participate due to their cognitive impairment. They may have had different perceptions.
2. Study was done in the National referral hospital and may not reflect the perception of nurses and patients at the peripheral hospitals.
3. It is possible that some of the process factors results that did not come out as significant in this study may have been significant if large numbers were used.

5.3 **Conclusions**

1. Nurses and patients who approved the physical environment of care were more satisfied with care than their counterparts who disapproved the same. Approval of the physical environment also had a positive relationship with recommendation of the facility to someone for care. While demographic characteristics influenced the nurses' perception of

care, it did not influence the patients' perception. Therefore physical environment was the structure factor identified as influencing both patients' and nurses' perception of care.

2. When activities described in the four phases of the nurse-patient relationship were implemented, patients and nurses were more satisfied with care. The use of Peplau's Interpersonal Relations Theory seemed to have a positive influence on both nurses and patients' perception of care and could be used to guide nursing care.

5.4 **Implications for nursing**

Patients' and nurses' perceptions of the nature of nursing care given should be central in all quality evaluation programmes. Effective nurse-patient interaction will ensure understanding of what the patient values for satisfaction of care. Nurse administrators, managers and practitioners should therefore allocate time for caring activities since they are very important to psychiatric patients. Nurse administrators need to advocate for adequate staff supply and continuing education programmes. These will help the nurse provide a more interactive care that will be satisfying both to the patient and to the nurse.

5.5. **Recommendations**

5.5.1. Operational Recommendations

Some of the Structure factors given by subjects for dissatisfaction of care and confirmed through observation checklists included low nurse to high patient ratio, poor quality and quantity of food, poor ward hygeine, lack of recreational activities within the wards and lack of adequate privacy and space for administrative duties. These factors negatively affected the process of care further causing dissatisfaction among patients and nurses.

Based on these findings the researcher recommends that the hospital administration takes the following actions:-

1. Urgently liaise with the Ministry of Health to obtain more KRPNs and KEPNs to improve the current unmanageable nurse -patient ratio.
2. Provide adequate, balanced diet at every meal and appropriate diet to patients with special nutritional needs.
3. Provide recreational facilities in the wards for patients who are unable to access occupational therapy department.
4. Provide adequate light and private rooms for examination, treatment procedures and administrative duties.
5. Provide adequate sitting facilities for staff, patients and their visitors. In addition, improve ward kitchens so that patients can have a place to store eating utensils and foodstuffs brought to them by relatives.
6. Perform client satisfaction surveys regularly to evaluate if nursing care provided meets the clients' needs.

5.5.2. Research Recommendation

1. Another research should be done to explore the nature of nurse patient communication in Mathari hospital to clarify why patients do not seem to be satisfied with information received from the nurses.
2. There is need to replicate the research using larger numbers. Follow up studies are also needed.

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APPENDIX 1: QUESTIONNAIRE FOR PATIENTS

Study title : Quality of In- Patient Psychiatric Nursing Care at Mathari Hospital, Nairobi

Questionnaire to be filled by researcher through interview with patients.

Questionnaire no .....
Date of interview.....
Ward.....

No	Section 1—Demographic Characteristics	
1	Age	Years.....
2	Gender	Male..... Female.....
3	Marital status	Married ..... Single..... Divorced ..... Widowed..... Others (Specify)
4	Highest level of education	No formal education... Primary..... Secondary..... Mid level college..... University.....
5	Residence	By District ..... By Estate.....
6	Occupation	.....
	SECTION 2 Physical Environment	
7	Duration of stay in the ward since this current admission	.....
8	Have you been admitted to this ward before? If yes, please indicate how many times	Yes..... No..... .....
9	Are you happy with the way the ward looks?	YES NO
	If no, please give suggestions for	.....

	improvement	……..
10	Does the environment provide for your privacy When Bathing?	YES NO
	If no please give suggestions for improvement	…… ……..
11	Does your environment provide for privacy when Dressing?	YES NO
	If no give suggestions for improvement	…… ……..
	SECTION 3 Care Process	
12	Are you happy with the attention you get from the nurses when you request for help?	YES NO
	Explain reasons for your answer	…… ……..
13	Are you happy with the way agitated patients are handled?	YES NO
	Explain reasons for your answer	…… ……..
14	Do nurses provide you with information about your sickness to your satisfaction	YES NO
	If no to No 14, Please give reason for dissatisfaction	…… …… ……
15	Are you given information about the medicines you take?	YES NO
16	If yes, please state any 3 things you were told about them	1…….. 2…… 3……..
17	Do nurses discuss about your progress	YES

	with you to your satisfaction?	NO
	If yes how often?	.....
18	In the ward you might be asked to take part in some activities such as cleaning the ward, making your bed, washing dishes and many others Do you participate in these activities?	YES NO
19	If YES to number 18 please list the ones you participate in	.....
	If NO, to number 18,please give reasons	....
20	Do you find these activities useful to you?	YES NO
21	Have you been informed about the care that you will be given after discharge?	YES NO
22	Are recreational facilities such as TV, out–door games, in–door games, newspapers and magazines available in the ward?	YES NO
	If YES to 24, please list the ones that interest you.	....
23	Do you access any of the facilities any time you want them?	YES NO
	Please state reasons for your answer	....
24	Do you have group meetings in the ward?	YES NO
	If YES to No 24, list the ones you have participated in	....
	Did you find the group meetings useful?	YES NO
25	Do nurses involve you in your care?	YES NO

	Please give reasons for your answer	…… ……
26	Do the nurses listen to you when talking with them?	YES NO
27	Apart from ward nurses, are other medical personnel available to you as soon as you express the need for them?	YES NO
	Please explain the reason for your answer	…… :……
28	Have you had a chance of a meeting between yourself, the nurse and your relative while in the ward?	YES NO
29	Are the meetings useful?	YES NO
30	Do you feel satisfied with the nursing care you receive in this ward?	YES NO
	SECTION 5 Overall	
31	Would you recommend someone who needs admission to a psychiatric hospital to this ward?	YES... NO
32	Is there any thing you wish to discuss that is not in the questionnaire?	YES NO
	If YES, explain	…… ……

Thank you, for participating in this interview session

APPENDIX 2: QUESTIONNAIRE FOR NURSES

Study Title: Quality of In-Patient Psychiatric Nursing Care at Mathari Hospital Nairobi

Nurses' Questionnaire to be self administered by nurses working in Mathari Hospital

Questionnaire no .....
Date of interview.....
Ward.....

No	SECTION 1 Demographic Characteristics	
1	Age	Years.....
2	Gender	Male..... Female.....
3	Marrital status	Married ..... Not married.....
4	Professional qualification	KRPN..... KEPN..... For non-psychiatric nurses (specify) your qualifications.....
5	Years of experience in psychiatric nursing practice	Years..... .....
6	Please list wards worked in since joining Mathari Hospital (including this current ward)	... .
7	How long have you worked in Mathari Hospital?	....

8	List the last 3 Continuing education course(s)/updates attended since you joined this hospital, duration and dates in the provided space	Course dates 1..... 2..... 3..... ....
	SECTION 2 Physical Environment	
9	Do you like the lay out of this ward you are working in currently?	YES. NO
	Please give reason for your answer	.....
10	Do you feel working in this environment?	SAFE..... SCARED.....
11	Do you have reliable supply of water?	YES..... NO.....
	If no please state one reason for your answer	....
12	Do you have adequate supply of electricity in all rooms?	YES NO.....
	If no please state one reason for your answer	....
13	Do you have reliable communication equipment such as telephones?	YES NO
14	Does the ward have adequate space for nurses' administrative duties?	YES NO
	If no suggest ways for improvement	.....
	SECTION 3 Administrative Arrangements & Staffing	
15	On average what is the maximum number of patients you look after during a day shift?	.....
16	Do you feel comfortable with this number?	YES NO

	What would be an ideal number for you?	.....
17	With your current knowledge do you feel competent looking after these patients?	YES NO
	If no to number 17, suggest ways for improvement	.....
18	Do you ever have problems you need to discuss with your superiors in the course of your duties?	Yes No
	Are your superiors willing to listen to you?	YES NO
19	Are all other professionals available promptly whenever their expertise is required?	YES NO
	If no number 19, please explain your answer	.....
20	For patients who need to be transferred to other wards within the hospital indicate the maximum time duration it takes on average	.....
	Are you happy with this duration?	YES NO
	Please state reasons for your answer	.....
21	For patients who need transfer for care outside the hospital, state the maximum time duration it takes on average	.....
	Do you feel happy with this duration?	YES NO
	Please state reason for your answer	.....

22	When looking after patients list any three (in order of priority) equipment and supplies that you require but you lack for nursing care.	1..... 2..... 3.....
	SECTION 4 Care Process	
23	Do you enjoy working with the patients with mental disorders?	YES NO
	State reason for your answer	....
24	How often are the patients reviewed in this ward by the ward Doctors?	YES NO
	Are you happy with the frequency?	YES NO
	State reason for your answer	
	During the review of the patient by the ward Doctor, Do you discuss with him /her Observations you have made on patient's condition?	YES NO
25	Do you discuss the treatment you think is best for the patient with the Doctor during patient stay in the ward?	YES NO
	State reason for your answer	.....
26	Overall do you get adequate support from other health workers to help you care for the patients?	YES NO
	State a reason for your answer	....
27	Do you ever hold ward meetings to evaluate care of patients?	YES NO
	If yes state how often	.....
	If no suggest ways for improvement	.....

27	Does your ward submit periodic evaluation reports to superiors?	YES NO
	If yes State benefits of the report	.....
28	Do you have adequate time to discuss with relatives about the patients condition?	Yes No
29	Do you involve patients' relatives in any Activities?	YES NO
	If yes state the nature of activities	.....
	If no give reasons	.....
30	Do you ever perform a home visit before a patient is discharged home?	YES No
	If yes how often?	.....
	If no give reasons	.....
	SECTION 5 Overall	
31	Would you recommend a relative or friend requiring admission for psychiatric care to this ward?	YES NO
	Please give reason for your answer	....
32	State any other issues not addressed in the questionnaire that is of concern to you and how it affects nursing care	....

Thank you for answering this questionnaire

APPENDIX 3 CHECKLIST to be filled through observation by researcher

Ward no----------

Items checked	Yes (1mark)	No (0 marks)
A) Physical environment, Equipment and Supplies		
1. The facility has been checked and meets local standards for the protection of health and safety of the inpatients and staff		
2. The ward space is sufficient for the number of patients admitted		
3. There is adequate space for specific treatment procedures		
4. There is adequate space for recreational activities		
5. There is reasonable space for receiving visitors		
6. There is acceptable place for patients to store there personal belongings		
7. The ward is arranged in such a way that each patient has a small piece of territory which is seen as his/hers		
8. Toilets are in good working order for all patients		
9. A reasonable daily supply of water is available for all patients		
10. There is reasonable privacy for relevant bodily functions		
11. The ward has adequate lighting		
12. The ward is clean		
13. Sufficient and appropriate bedding is available for use by patients		
14. Patients have adequate and appropriate seats		
15. Patients have sufficient and appropriate eating utensils		
16. Adequate supply of basic general drugs are available at all times (if no indicate approx duration of lack)		
17. Ward has adequate supply of basic psychiatric drugs		
18. A first aid kit is available in the ward		
19. All potentially dangerous drug are stored safely from patient's reach		
20. The ward has trays for basic nursing procedures at all times		
21. The facility kitchen complies with recommended local standards for hygiene and food service		

B) Administrative Arrangements		
22. A written mental health policy is available in the ward stipulating the following:		
23. Philosophy		
24. Model of Care		
25. Conditions of service for staff		
26. Job descriptions for staff		
27. Disciplinary procedures for various categories		
28. of cases		
29. At least two-thirds of the care givers in the ward are employed full-time		
30. Staff are provided with room to be away from patients at appropriate periods during the day		
31. Staff are provided with time to be away from patients at appropriate periods during the day		
32. Written procedures for protection of confidentiality of patients' records are available		
33. Written records are appropriately maintained for all patients		
34. Written procedures to be followed in case of violence break outs in the ward		
35. Written procedures to be followed when dealing with complaints from patients and relatives are available		
36. Written policy on continuing staff education		
37. All care giving staff are trained on emergency and trauma care		
38. All nurses are trained on basic psychiatric nursing skills		
39. Staff have been trained specifically for managing psychiatric emergencies		
40. Specific guidelines on side effects of the drugs to record are available		
41. Opportunities are provided for nurses to discuss with their superiors any difficulties experienced in the course of duties.		
42. Annually, nurses conduct an internal audit to identify strengths and weaknesses in the wards policies and programme		

C)Staffing		
43. The facility has equivalent of at least one full-time psychiatrist per 20 acute patients		
44. The facility has equivalent of at least one full-time psychiatrist per 60 chronic patients		
45. The facility has equivalent of at least one full-time registered psychiatric nurse per 40 patients		
46. The facility has at least one full-time occupational therapist per 40 patients		
47. The facility has one full- time clinical psychologist per 40 patients		
48. The facility has at least one full-time qualified psychiatric social worker per 40 patients		
49. The facility has one dedicated psychiatric registrar per 60 patients		
50. The facility has at least one Half –time dentist per 200 patients		
51. The facility has at least one care giving staff per 5 patients during day shifts		
52. The facility has at least one full-time care giving staff member per 15 patients		
53. At least one professional staff member is on duty in the ward at all times		
D) Care process		
54. Newly arrived patients are made to feel welcome on admission		
55. Staff speaks frequently to patients and always in a friendly, positive and courteous manner.		
56. There is adequate attention to personal appearance for those unable to care for themselves		
57. Meals served to patients meet recommended minimum nutritional requirements		
58. Suitable food is provided for those with special nutritional needs		
59. Every newly admitted patient has full medical examination in the first 24 hours of admission		
60. Acute patients have a medical evaluation at least every day		
61. Chronic patients have a medical evaluation at least every month		

62. An informed consent is obtained prior to starting a planned treatment		
63. There are clear written guidelines on the indications of use of drugs therapies		
64. There are clear written guide lines on procedures to be followed by all nurse in management of psychiatric emergencies		
65. There clear guidelines on use of electroconvulsive therapy		
66. Treatment plans are written down for all patient and followed by all staff		
67. Meetings are held once every month for staff to discuss care plans for individual patients		
68. Patients are kept informed about their own progress		
69. Help and support are quickly available if violence breaks out		
70. Staff have access to specialist medical help in case of an emergency		
71. Patients are encouraged to take up suitable and useful work for their benefit		
72. No patients are kept locked in individual rooms.		
73. There are written procedures for restrains and staff strictly follow them.		
74. Patient's privacy is observed during all procedures		
75. Patients are treated with respect at all times		
76. Patient's information is held in confidence at all times		
E) Discharge and Follow Up		
77. Nursing staff discuss discharge plans with respective patients		
78. Upon discharged patients are thoroughly oriented in terms of follow up and social services available in their community		
79. When a patient is discharged ,family members are instructed about measures to take in case of relapse or reappearance of acute symptoms		
80. Upon discharge ,a standard information form is sent to the health facility responsible for follow up		
END		

Appendix 4 Study Area Preview

Mathari Hospital, Nairobi (see picture below) was purposively selected for the study. This is the National mental health teaching and referral hospital. It is situated approximately 10 Km from Nairobi's city centre on Thika-Nairobi road.

It is the largest public hospital for mental health care with the bed capacity of 750.It is a suitable study area because it offers relatively ideal research conditions. Being the national referral hospital it has patients with variations both in conditions and socio-demographic backgrounds. It also offers best environment for patient care relative to other public mental health hospitals in terms of physical facilities and categories of staff.

The hospital is divided into two main sides and patients are assigned according to legal procedures guiding their admissions. Patients admitted under criminal procedure code and prison's act are admitted to Maximum Security Unit (MSU) which is further divided into male and female wards .MSU also hosts an infirmary ward for all physically sick patients who cannot be managed in the other psychiatric wards irrespective of their admission legal state.

Patients who are admitted under Mental Health Act are admitted to the hospital's civil side which has three female wards, five male wards and one private ward for both males and females .The civil side also hosts the only drugs rehabilitation ward which is for males only at the moment. It also hosts an out patient department for both the physically sick and patients with mental disorders.

The nursing services at the hospital are headed by Assistant Chief Nursing officer who has a total of 82 Registered nurses of whom 35 have post basic diploma in Psychiatric nursing and 164 enrolled nurses of whom 86 have a post basic certificate in psychiatric nursing.

PART OF MATHARI HOSPITAL

APPENDIX 5 MINI MENTAL STATE EXAMINATION (adopted from Andrews and Jenkins, Rkikuj 1999)

Name (coded for anonymity).....Examiner:.....Date:.....

Max Score	Score	
		ORIENTATION
5	( )	what is the (year), (season), (date), (month), (day).
5	( )	Where are we: (state), (city), (what part of the city – e.g. near the sea, eastern suburbs), (which community centre), (floor).
		REGISTRATION
3.	( )	Ask if you can test the individual's memory. Name 3 objects (e.g. apple, table, penny) taking 1 Second to say each one. Then ask the individual to repeat the names of all 3 objects. Give 1 point for each correct answer. After this, repeat the object names until all 3 are learned (up to 6 trials). No trials needed: .....
		ATTENTION AND CALCULATION
5	( )	Spell "world" backwards. Give 1 point for each letter that is in the right place (e.g. DLROW=5, DLORW=3) Alternatively, do serial 7s. Ask the individual to count backwards from 100 in blocks of 7 (e.g., 93, 86, 79, 72, 65). Stop after 5 subtractions. Give one point for each correct answer. If one answer is incorrect (e.g., 92) but the following answer is 7 less than the previous answer (i.e.,850. count the second answer as being correct.
		RECALL
3	( )	Ask for the 3 objects repeated above. Give 1 point for each correct object
2	( )	**LANGUAGE** Point to a pencil and ask the individual to name this object (1) Point). Do the same thing with a wrist –watch (1 point).
1	( )	As the individual to repeat the following: "No ifs, and or buts" (1 point) Allow only one trial.

3	( )	Give the individual a piece of blank white paper and ask him or her to follow a 3-stage command: "Take a paper in your right hand, fold it in half and put it on the floor" (1 point for each part that is correctly followed).
1	( )	Show the individual the "CLOSE YOUR EYES" message on the following page (but not the pentagons yet). Ask him or to read the message and do what it says (give 1 point if the individual actually closes his or her eyes).
1	( )	Ask the individual to write a sentence on a blank piece of paper. The sentence must contain a subject and a verb, and must be sensible. Punctuation and grammar are not important (1 point).
1	( )	Show the individual the pentagons on the following page and ask him or her to copy the design exactly as it is (1 point). All 10 angels need to be present and the two shapes must intersect to score 1 point. Tremor & rotation are ignored.

Total Score

ASSESS level of consciousness along a continuum:

( )

Alert	Drowsy	Stupor	Coma
30	20	10	0

APPENDIX 6: RESPONDENTS' CONSENT FORM (Patients)

Subject code no..... Ward.....

I,Wagoro Miriam , wish to invite you to participate in this research study which seeks to determine how psychiatric nursing in Mathari Hospital can be improved. Over the next three months over 200 patients will be included in this non-therapeutic study without discrimination with regards to ethnicity, education status, socioeconomic status and gender. Since you are already a patient experiencing nursing care at this hospital, you have been selected as a possible participant. As a benefit, the nursing care given to you will be closely monitored and will provide information that might enable nurses to provide better psychiatric nursing care to other patients in future.

If you were to participate in the study the specially trained researcher would (1) ask you about your demographic data, (2) Ask you specific questions on issues concerning the nursing care you receive in the ward. (3) Get some information about your diagnosis in your file and (4) record all information obtained in sheet of paper.
There is no physical risk associated with this study. Participation in the study will be approximately 15-30 minutes. You are free to ask any questions about the study at any time. The investigator's numbers is 0722737356 or inform the ward nurse in charge about your desire to see the investigator.

Your participation in this study is voluntary (.You are under no obligation to participate). You have the right to withdraw at any time and the care you receive and your relationship with health care team will not be affected. There is no financial cost for participation or non-participation. Members of the health team looking after you will be informed about your participation.

Study data will be coded so they will not be linked to your name. All information obtained in the course of this study will be held in confidence .You will be able to access findings through a written request to the hospital administrator. Copy of this consent form will be given to you.

I have read this consent form and understood its content. I understand am to rely on the investigator for any information I need concerning the study. I have been given an opportunity to discuss all my concerns with the investigator and therefore accept to participate in this study.

Subject's signature ..... Date.....

Investigator's signature.....Date.....

APPENDIX 7 RESPONDENTS' CONSENT FORM (Nurses')

Subject code no..... Ward.....

I, Wagoro Miriam, wish to invite you to participate in this research study which seeks to determine how psychiatric nursing in Mathari Hospital can be improved. Over the next three months over 200 nurses will be included in this non-therapeutic study without discrimination with regards to ethnicity, professional status, socioeconomic status and gender. Since you are already a nurse at this hospital, you have been selected as a possible participant. As a benefit, environment in which you work and the care you give will be assessed and will provide information that might improve nurses working environment and improve psychiatric nursing care in future.

If you were to participate in the study, you will be required to complete a questionnaire that asks you (1) your demographic data (2) specific questions on issues concerning the nursing care you give on the ward. (3) Specific questions about the environment in which you work.
There is no physical risk associated with this study Participation in the study will be approximately 15-30 minutes. You are free to ask any questions about the study at any time. The investigator's numbers is 0722737356 or inform the ward nurse in charge about your desire to see the investigator.

Your participation in this study is voluntary (.You are under no obligation to participate). You have the right to withdraw at any time without any victimization. There is no financial cost for participation or non-participation

Study data will be coded so they will not be linked to your name. All information obtained in the course of this study will be held in confidence .You will be able to access findings through a written request to the hospital administrator.
Copy of this consent form will be given to you.

I have read this consent form and understood its content. I understand am to rely on the investigator for any information I need concerning the study. I have been given an opportunity to discuss all my concerns with the investigator and therefore accept to participate in the study

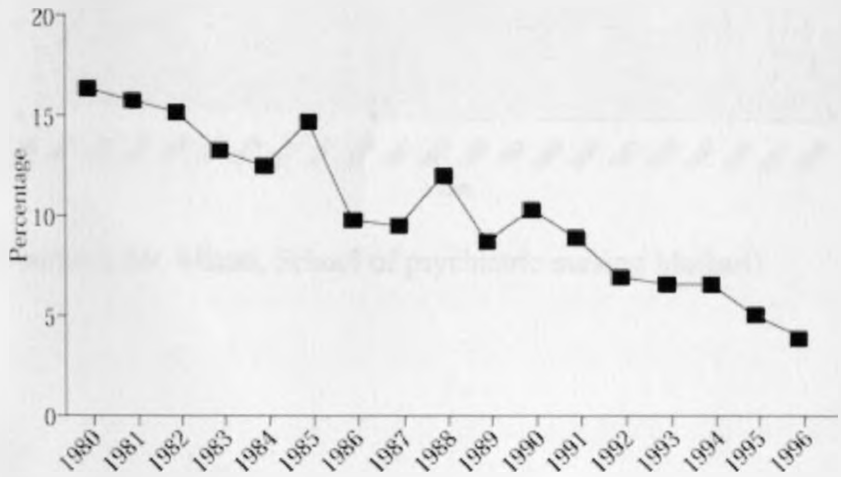
Subject's signature ..... Date.....

Investigator.....Date.....

Appendix 8 Training trends in Psychiatric nursing colleges/schools

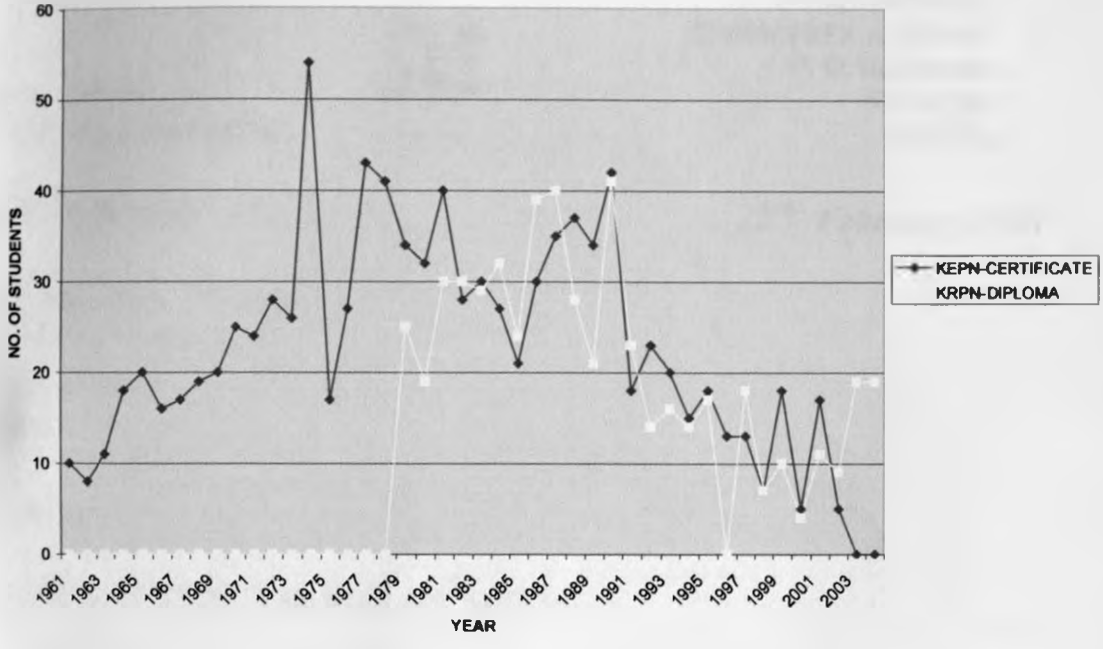
Australian example of Percentage of graduates of master's-degree programs in nursing specializing in psychiatric nursing, 1980

1996



(From Brown & Lo 1998)

CHART OF STUDENTS IN-TAKE FOR TRAINING IN MENTAL HEALTH AND PSYCHIATRIC NURSING AT MATHARI SCHOOL OF PSYCHIATRIC NURSING FROM 1962 TO 2004



(Courtesy; Mr. Miano, School of psychiatric nursing Mathari)

MINISTRY OF EDUCATION, SCIENCE & TECHNOLOGY

Telegrams: EDUCATION", Nairobi

Fax No.
Telephone: 318581
When replying please quote

JOGOO HOUSE
HARAMBEE AVENUE
P. O. Box 30040
NAIROBI
KENYA

MOEST 13/001/36C 119/ 2

22nd February 2006

Wagoro Miriam C. Otieno
University of Nairobi
P. O. Box 30197
NAIROBI

Dear Madam

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on '***Structure and process factors that influence patients and perceptions of in patient psychiatric nursing care at Mathari Hospital'***

This is to inform you that you have been authorized to carry out research in Mathari Hospital in Nairobi for a period ending 30th April 2006.

You are advised to report to the Provincial Commissioner Nairobi, the Provincial Director of Education, Provincial Medical Officer of Health Nairobi and the Director Mathari Hospital before embarking on your research project.

Upon completion of your research you are expected to submit two copies of your research report to this office.

Yours faithfully

B. O. ADEWA
FOR: PERMANENT SECRETARY

Copy to: The Provincial Commissioner – **Nairobi**
The Provincial Director of Education – **Nairobi**
Provincial Medical Officer of Health – **Nairobi**
The Director, Mathari Hospital - **Nairobi**

en replying please quote

f No .....
and date

REPUBLIC OF KENYA

MINISTRY OF HEALTH

DEPARTMENT OF STANDARDS AND
REGULATORY SERVICES (DSRS)
Afya House, Cathedral Road,
P.O. Box 30016, Nairobi, Kenya
Tel: 254-20-717077 Fax: 254-20-722986
E-mail: dsrs@africaonline.co.ke

DSRS

Ref. RES/A/9/Vol.III/06/14 **21st February 2006**

Wagoro M. C. A.
H56/P/8316/04
School of Nursing Science
College of Health Sciences
P.O. Box 19676
NAIROBI

RE: AUTHORITY TO CONDUCT RESEARCH AT MATHARI HOSPITAL

Reference is made to your proposal to conduct a study on ***"Patients' and nurses' perceptions of quality of in-patient psychiatric nursing Care at Mathari Hospital, Nairobi".***

Authority is granted to conduct this study and you are required to observe all the ethics and that you are required to submit a copy of your final Report to:-

- MOH City Council of Nairobi
- Director of Medical Services.

Dr. Tom Mboya Okeyo
For: DIRECTOR OF MEDICAL SERVICES

TITLE: REVIEW AND DIAGNOSIS OF NORMAL OVARIES, THEIR VARIANCES AND NEOPLASTIC LESIONS. EVALUATION OF THE TECHNICAL QUALITY OF THE SLIDES AND INTEROBSERVER DIAGNOSTIC CONCURRENCES.

A DISSERTATION SUBMITTED IN PART-FULFILMENT FOR THE DEGREE OF MASTERS OF MEDICINE (PATHOLOGY).
UNIVERSITY OF NAIROBI.

BY DR WAIRIMU WAWERU
MBChB (NAIROBI)
1991

DECLARATION

This work is original and has not to my knowledge been submitted for a degree in any other university.

Signed:----------

Dr WAIRIMU WAWERU

MBChB UNIVERSITY OF NAIROBI

This dissertation has been submitted for examination with my approval as the university supervisor.

Signed:----------

Professor D. W. PENNER

Department of Human pathology

University of Nairobi

DEDICATION.

To my dear mother and the memory of my dad.

ACKNOWLEDGEMENTS

I wish to thank the following to whom I am greatly indebted and without whose help this work would not have been possible.

1. My Supervisor Professor D. W. Penner for guiding and supporting me through out the preparation of this dissertation.
2. Professor A. Kungu for the support and encouragement offered.
3. The technical staff in the histopathology Laboratory of KNH.
4. Dr Rachel Kamau of the Dept. of Community Health for all her assistance and support.
5. Last but not least to all those who knowingly or unknowingly assisted me in the preparation of this thesis.

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SUMMARY

A total of 407 cases were recorded under "ovarian lesions" in the department of histopathology KNH over a 5 year period, extending from 1st January 1986 to December 1990. These 407 case excluded all the lesions recorded as inflammatory .

Out of 407 recorded cases, 368 cases had either the previous histology slides retrieved or had the paraffin embedded tissue blocks retrieved and processed.

Following a microscopic review of the 368 cases, 70 of these were omitted because they did not show any ovarian tissue or the required diagnosis as outlined.

Two hundred and ninety eight cases were therefore recruited into the study . Sixty percent of these were diagnosed as normal ovaries or their variances, that is corpora lutea and graafian follicles that were apparently considered abnormal ovaries and hence removed. Eight of this had no epithelial lining and were diagnosed as simple ovarian cysts.

Forty percent of the cases were microscopically identified as neoplasm that are listed in the World Health Organization (WHO) classification namely epithelial tumours , germ cell tumours , sex cord-stromal tumours and lymphoma .

Three of these neoplastic cases had two types of tumours identified , this included two cases with diagnoses of Brenner

tumour with mucinous cystadenoma and another case with a diagnosis of benign cystic teratoma and serous cystadenoma. In two of the above cases, the tissues demonstrating the two types of tumour, were submitted in separate bottles.

The diagnoses of all the cases were independently made without prior knowledge of the original diagnoses. The second diagnoses were first made by the investigator and then reviewed by the supervisor before the final diagnoses were made. The second diagnoses were then compared with the original ones made by various pathologists within the department of human pathology on staff at the time when the tissues were submitted to the laboratory.

Out of the slides examined 66% were found to be of reasonable technical quality, adequate for a definitive diagnosis. The remaining 34% were of a less than the desired quality and required an increased amount of time to achieve a diagnosis. There was an overall diagnostic interobserver variation of 21%

.

INTRODUCTION.

The ovary is a complex organ from an embryonic, anatomic and functional standpoint. Therefore it is not surprising that its tumours are diverse, complicated and often histogenetically poorly understood (1).The gonad develops primarily from the mesoderm except for the germ cells which arise from the endoderm.

In the sexually mature females, the ovary undergoes marked cyclic changes that result in structural changes that may be grossly and microscopically mistaken for neoplasm.

Ovarian tumours account for a considerable proportion of clinically important tumours of the female with 2/3 of the cases being encountered in the reproductive age groups.

Most of these tumours are frequently large with relatively minimal symptoms and 2/3 of the malignant tumours have spread beyond the ovary at the time of the diagnosis. This late presentation and diagnosis results in a poor outcome for malignant tumours (2).

Microscopic interpretation of tissue sections on glass slides, is a subjective value judgement as are most professional decisions based on value judgements.

The quality and accuracy of this diagnostic process depends on the training and experience of the pathologist and the technical quality of the tissue preparation on the glass slide.

The technical quality of the glass slide tissue preparations, previously prepared and diagnosed were evaluated, where the original slides were not available or the staining was pale, newly prepared slides were evaluated.

BACKGROUND INFORMATION.

The ovaries are paired pelvic organs that lie on either side of the uterus close to the pelvic wall, behind the broad ligaments and anterior to the rectum.

In the adult female, the ovaries have an ovoid shape; measure approximately 3-5 cm by 1.5-3 cm by 0.6-1.5 cm and weigh an average of 5-8 g. The weight and size varies depending on the follicular status and therefore the size and weight may considerably exceed the above dimensions.

Embryologic development of the ovary starts towards the end of the fourth week when primordial germ cell, identifiable in the yolk sac, migrate into the medial portion of the urogenital ridge. Following the arrival of the germ cells, the mesodermal epithelium proliferates and forms the epithelium of the final gonad. In the presence of 46XX genetic constitution, the dividing germ cells become incorporated into a proliferating mass of surface epithelial cells. This result in a thickened cortex which precedes the organization of the adult ovary.

From the 2nd trimester to early 3rd trimester the thickened cortical mass of proliferating epithelial and germ cells are divided into small groups by strands of stromal tissue, extending from the medulla to the cortex.

The small groups of germ cells and epithelial cells are

further subdivided into primordial follicles composed of a single germ cell surrounded by a layer of epithelial cells which constitute the primitive granulosa.
In normal development each germ cell is characteristically encapsulated in its own follicle, this is associated with entry into meiosis and no further proliferation.

Some of the early proliferations that do not degenerate, remain as tubular structure called rete ovarii. Interstitial (leydig) cells develop extensively in the stroma of 2nd trimester female gonad but degenerate in most cases by term. A few cells may be found in the hilum of the adult ovary, where they may be associated with the rete ovarii and are called hilus cells.

The ovary is covered by a single focally pseudostratified layer of modified peritoneal cells that constitute the surface epithelium. These cells vary from flat, through cuboidal to columnar and several types may be seen in different areas of the same ovary.
The surface cells are separated from the underlying stroma by a distinct basement membrane.

The stroma of the ovarian cortex and medulla is composed of densely cellular whorls of spindle shaped fibroblastic cells with scant cytoplasm. The amount of stroma in the cortex and the medulla varies considerable from one person to another,

decreasing considerably in the menopause. The fibroblastic ovarian stromal cells differentiate into a variety of cells which include follicular theca interna cells, enzymatically active stromal cells, smooth muscle cells, decidua cells, endometrial stromal type cells, fat cells, stromal leydig cells and rare cells of neuroendocrine or APUD type.

At birth approximately 400,000 primordial follicle are present in the ovary and progressively decrease until they disappear at the time of menopause.

The primordial follicle consists of a primary oocyte surrounded by a layer of flattened granulosa cells resting on a thin basal lamina. Rare primordial and maturing follicles may contain multiple oocyte. The oocyte is at the interphase period and remains as such until it degenerates or undergoes follicular maturation before ovulation. Follicular maturation begins during the luteal phase of the preceding menstrual cycle and continues throughout the follicular phase with resultant ovulation.

Following ovulation of one or occasionally multiple follicles, a corpus luteum is formed. The corpus luteum is composed of an inner layer of luteinized granulosa cells and an outer layer of the theca interna lutein cells.

In the absence of fertilization, involution takes place and a fibrotic structure called corpus albicans is formed.

Early follicles degenerate and disappear without a trace. Antral follicles result in the formation of corpus fibrosum (3,4). Following the usual physiological process in the ovary, cystic follicles and cystic corpus luteum may develop. These resemble the usual structure but are larger. They measure 3-8cm whereas the normal follicles and corpus luteum are less than 2.5 cm in diameter.The enlarged cystic corpus luteum usually regress after varying amounts of time. Occasionally the may rupture with haemorrhage.

Cystic follicles are common during fetal life, throughout the reproductive period and rarely in the menopausal period. Cystic corpus luteum occur during the reproductive period and exceptionally may follow sporadic ovulations in a post menopausal woman.

Simple ovarian cysts are of unknown origin in which the lining has been destroyed and cannot be identified. Most are thought to be follicular in origin.

Ovarian tumours account for a significant proportion of clinically important tumours of the female. Ovarian cancer remains as an important cause of death in gynaecological oncology, and has been reported in new York city to be a leading cause of death among women with genital cancer.(5,6)

About two thirds of ovarian tumours are encountered in the reproductive age group and over 90% between the ages 20-65

years, less than 2% are found in children, 80-85% are benign tumours. It has been reported that the chances that a primary ovarian tumour is malignant in a patient under the age of 45 years is less than 1 in 5, but beyond the age of 45 years is almost 1 in 3.

Ovarian cancer is the 5th most common cancer in females in the United States, accounting for 5% of the total number of cancers and 25% of all the cancers of the female genital tract. It accounts for 47% of all deaths due to cancers of female genital organs. The risk at birth of a female developing an ovarian cancer sometimes in her life is almost 1.5%, and of her dying from it, almost 1% (2).

Ovarian cancer is the most lethal gynaecological malignancy in the western world with Sweden reporting the highest rates in the world, followed by Denmark (7). African data is not available but in Kenya cancer of the ovary is over shadowed by cancer of the cervix which ranks first among the genital cancers.

Japan reports rates that are 3-7 times lower than the Western countries but it has been noted that Japanese migrants to the United States have incidence rate approaching those of the American natives indicating that factors other than genetics play a role in the lower frequencies in the Japanese. Blacks in United States have a lower incidence rate of ovarian cancer

than Whites but the difference is not as great as that between the Japanese and the Americans. Incidence rates in Africa are said to be lower than those in western countries.

The aetiology of ovarian cancer is not known, epidemiology and animal investigations have not provided clues to the aetiology of ovarian cancer. There are two speculations on the pathogenesis of human ovarian cancer, the first is by Fathalla who proposed that the aetiology is due to repeated trauma on the surface epithelium following monthly ovulation . This is supported by the evidence of rarity of ovarian cancer in mammals with oestrus cycles and infrequent ovulation, the rarity of common epithelial tumours in children and women with gonadal dysgenesis and their increase incidence in nuns and single women .

Pregnancy appears to protect a woman against ovarian cancer but it is not clear whether this is due to suppression of the ovary or due to other factors.

The second speculation put forward by Woodruff and Julian proposes that carcinogenic agents enter the peritoneal cavity via the genital tract and act upon the surface epithelium and its inclusion cysts in which these agents get trapped. The nature of these substances and whether they are actually there is not known (2).

The relative frequency of ovarian neoplasm varies according to information source in different texts. In a previous United States study (8), benign cystic teratoma was found to be the single most common ovarian neoplasm accounting for 44% of all neoplasm, and was 57% more common than benign serous tumours.

Germ cell neoplasms were the most common group of benign ovarian neoplasms, whereas epithelial tumours were the most common of the malignant neoplasm. Stromal neoplasm and tumours of borderline malignancy were uncommon at all ages.
The symptoms frequently encountered in ovarian neoplasms include abdominal pain and swelling, ascites and features of widespread metastasis. Rare features include pyrexia of unknown origin and Zollinger-Ellison syndrome (9,10,11,12).

Most ovarian tumours are diagnosed late and thus have a poor prognosis. Many factors have been found to correlate with prognosis in patient with ovarian neoplasms. These include tumours stage, histologic type, tumour grade, residual disease, ascites, psammoma bodies, site of metastases, age, race, ploidy, and presenting symptoms. A multivariate analysis of these factors has shown that tumour grade and presence of residual disease are stage specific independent prognostic factors (13).

There has been an increasing body of evidence in the literature in support of a hereditary aetiology for a variety of cancers including those involving the ovary. This implies that the prognosis of ovarian cancer could be improved in patients whose aetiology is attributed to prominent genetic susceptibility if biomarkers could be identified (14). In ovarian cancers, environmental factors are thought to play an important role in the aetiology (15).

Ovarian tumour classification is controversial largely due to the incomplete understanding of the gonadal embryology and morphology.

The classification has been based on the recognition of identifiable cell type and patterns of growth. Classification of the common epithelial tumours, the statistically most important category of ovarian neoplasms follows closely the recommendations of FIGO - International Federation of Gynaecology and Obstetrics.

Following the classification by Scully (2), which is a slight modification of the WHO classification (16), ovarian neoplasm can be grouped as follows:

Table II

HISTOLOGIC CLASSIFICATION OF OVARIAN TUMORS

COMMON "EPITHELIAL" TUMORS

SEROUS TUMORS
- Benign
  - Cystadenoma and papillary cystadenoma
  - Surface papilloma
  - Adenofibroma and cystadenofibroma
- Of borderline malignancy (carcinomas of low malignant potential)
  - Cystadenoma and papillary cystadenoma
  - Surface papilloma
  - Adenofibroma and cystadenofibroma
- Malignant
  - Adenocarcinoma, papillary adenocarcinoma, and papillary cystadenocarcinoma
  - Surface papillary carcinoma
  - Malignant adenofibroma and cystadenofibroma

MUCINOUS TUMORS
- Benign
  - Cystadenoma
  - Adenofibroma and cystadenofibroma
- Of borderline malignancy (carcinomas of low malignant potential)
  - Cystadenoma
  - Adenofibroma and cystadenofibroma
- Malignant
  - Adenocarcinoma and cystadenocarcinoma
  - Malignant adenofibroma and cystadenofibroma

ENDOMETRIOID TUMORS
- Benign
  - Adenoma and cystadenoma
  - Adenofibroma and cystadenofibroma
- Of borderline malignancy (carcinomas of low malignant potential)
  - Adenoma and cystadenoma
  - Adenofibroma and cystadenofibroma
- Malignant
  - Carcinoma
    - Adenocarcinoma
    - Adenoacanthoma
    - Adenosquamous carcinoma
    - Malignant adenofibroma and cystadenofibroma
  - Endometrioid stromal sarcomas
  - Mesodermal (müllerian) adenosarcoma
  - Mesodermal (müllerian) mixed tumors, homologous and heterologous

CLEAR CELL (MESONEPHROID) TUMORS
- Benign
  - Adenofibroma
- Of borderline malignancy (carcinomas of low malignant potential)
- Malignant
  - Carcinoma and adenocarcinoma

BRENNER TUMORS
- Benign
- Of borderline malignancy (proliferating)
- Malignant

MIXED EPITHELIAL TUMORS
- Benign
- Of borderline malignancy
- Malignant

UNDIFFERENTIATED CARCINOMA

UNCLASSIFIED EPITHELIAL TUMORS

SEX CORD-STROMAL TUMORS

GRANULOSA-STROMAL CELL TUMORS
- Granulosa cell tumor
- Tumors in the thecoma-fibroma group
  - Thecoma
  - Fibroma
  - Unclassified
    - Sclerosing stromal tumor
    - Others

SERTOLI-LEYDIG CELL TUMORS; ANDROBLASTOMAS
- Well differentiated
  - Sertoli cell tumor; tubular androblastoma (tubular adenoma of Pick)
  - Sertoli cell tumor with lipid storage; tubular androblastoma with lipid storage (folliculome lipidique of Lecène)
  - Sertoli-Leydig cell tumor (tubular adenoma with Leydig cells)
  - Leydig cell tumor; hilus cell tumor
  - Stromal Leydig cell tumor
- Of intermediate differentiation
- Poorly differentiated (sarcomatoid)
- With heterologous elements

GYNANDROBLASTOMA

UNCLASSIFIED
- Sex cord tumor with annular tubules
- Others

LIPID (LIPOID) CELL TUMOR

GERM CELL TUMORS

DYSGERMINOMA

ENDODERMAL SINUS TUMOR

EMBRYONAL CARCINOMA

POLYEMBRYOMA

CHORIOCARCINOMA

TERATOMAS
- Immature
- Mature
  - Solid
  - Cystic
    - Dermoid cyst (mature cystic teratoma)
    - Dermoid cyst with malignant transformation
- Monodermal and highly specialized
  - Struma ovarii
  - Carcinoid
  - Strumal carcinoid
  - Others

MIXED FORMS

MIXED GERM CELL AND SEX CORD–STROMAL TUMORS

GONADOBLASTOMA
- Pure
- Mixed with dysgerminoma or other form of germ cell tumor

OTHERS

SOFT TISSUE TUMORS NOT SPECIFIC TO OVARY

UNCLASSIFIED TUMORS

SECONDARY (METASTATIC) TUMORS

TUMOR-LIKE CONDITIONS

PREGNANCY LUTEOMA

HYPERPLASIA OF OVARIAN STROMA AND STROMAL HYPERTHECOSIS

MASSIVE EDEMA

SOLITARY FOLLICLE CYST AND CORPUS LUTEUM CYST

MULTIPLE FOLLICLE CYSTS (POLYCYSTIC OVARIES)

MULTIPLE LUTEINIZED FOLLICLE CYSTS AND/OR CORPORA LUTEA (HYPERREACTIO LUTEINALIS)

ENDOMETRIOSIS

SURFACE-EPITHELIAL INCLUSION CYSTS (GERMINAL INCLUSION CYSTS)

SIMPLE CYSTS

INFLAMMATORY LESIONS

PAROVARIAN CYSTS

Common epithelial tumours are considered to be derived from the surface epithelium (coelomic epithelium-mesothelium) and adjacent ovarian stroma. They constitute over two third of all the primary neoplasms and almost 90% of all malignant ovarian neoplasms. The cause of the high neoplastic potential of the ovarian surface epithelium is not known. Although the epithelial tumours show a wide histologic variation, they are thought to have a common ancestry which is supported by the occurrence of a combination of the various histological types of epithelial tumours.

The difficulty of differentiating a borderline from malignant tumour significant and also varies from one subtype of common epithelial tumour to another being greatest in tumours characterized by the presence of small locules, glands or nests.

Patients presenting with ovarian cancers while still young have a better prognosis. This is possibly due to the fact that younger patients are otherwise more fit to withstand aggressive surgery and cytotoxic therapy not normally employed in older patients (5).

The clinical implications of lymphocytic infiltration has been shown to be a good prognostic indicator in cervical carcinoma. A similar response has been suggested in trophoblastic disease and breast cancer.

An association between the prognosis and intensity of lymphocytic infiltration seen in histologic section of ovarian adenocarcinoma has been demonstrated. The lymphocytic infiltration is presumed to be an expression of the local host response and this has been suggested as a possible morphologic indication of tumour behaviour and response to therapy (17).

Sex cord- stroma cells tumour include all the neoplasm derived from the sex cord or primitive cortical lobules and the specialized stroma (mesenchyme) of the developing gonad. The generic term reflects differing views of gonadal embryology.

These tumour accounts for approximately 6%-8% of all ovarian tumours and include the majority of functioning tumours with clinical manifestation. Fibromas which are almost never associated with endocrine manifestations account for approximately half of all such tumours (2,3).
The clinical symptoms associated with these tumour are of endocrine origin. The tumours may produce either oestrogen and/ or androgens. The effect of the hormones produced will depend on the age of the patient .

Virilizing tumours are uncommon being less than 1% of all ovarian tumour. Some hilar cell tumour have been associated with endometrial abnormalities and carcinoma. It has been suggested that premenopausal women tend to show virilization

whereas postmenopausal women present with bleeding and signs of oestrogen activity (18).
Sclerosing stromal tumours are said to occur more commonly in the under 30 year old patients differing from other sex cord-stromal tumours which have a peak incidence in the 5th and 6th decade. Over 70% of the reported cases are under 30 year of age (19).

Germ cell tumours of the ovary are composed of a number of histologically different tumour types that are believed to be derived from the primitive germ cell of embryonic gonad. The concept of germ cell tumour as a specific group of gonadal neoplasm is based on :- i. the common histogenesis of these neoplasm ii. the relative frequent presence of histologically different neoplastic elements within the same tumour mass iii. the presence of histogenetically similar neoplasm in extra gonadal locations along the line of migration of the primitive germ from the wall of the yolk sac to the gonadal ridge iv. the remarkable homology between the various tumours in the male and the female (2,3).

The germ cell tumours constitute the second largest group of ovarian neoplasms after the common epithelial tumours. In Europe and North America, they comprise approximately 20% of all ovarian neoplasms but in Asia and Africa they constitute a much larger percentage of the ovarian tumours.

Germ cell tumours are encountered most frequently in the first to the sixth decade though they have been observed during fetal life. In children and adolescents, more than 60% of ovarian neoplasms are of germ cell origin and a third of them are malignant. In the adults the great majority of germ cell tumours (95%) are benign and consist of mature cystic teratomas (dermoid cysts).

Dysgerminoma is a rare germ cell tumour that has a high cure rate which is markedly in contrast with the low rates associated with other malignant ovarian tumour (20). It occurs principally in young females with 80% of the cases seen in patients less than 25 years of age. The tumour just like the seminoma is highly radiosensitive. The majority of metastatic germ cell tumours of the ovary appear to be curable provided that effective treatment is provided early. This has been shown in studies involving the treatment of malignant teratomas and dysgerminomas (21).

Malignant components arising in benign cystic teratoma of the ovary are rare. It occurs in 1 to 2% of dermoid cysts and the commonest histologic type is the infiltrating squamous cell carcinoma. Other malignant types include adenocarcinoma, the second commonest type, carcinoid, malignant melanoma and a variety of sarcomas (2,3,22). Epidemiologic data showing that ovarian teratomas occur at an early age and often are

bilateral, supporting a genetic theory, as these characteristics are common to hereditary tumours. A few familial occurrences of benign cystic teratomas have been reported thus emphasizing the possible familial factor involved in the development of these tumours (23). It is suggested that careful gynaecologic examination and follow up of relatives of such patients may better disclose the true incidence of the familial occurrences of these ovarian neoplasms.

A few cases of spontaneous rupture of benign cystic teratomas has been reported. This is in keeping with the low rates of spontaneous ruptures of ovarian cysts at approximately 2% . Benign cystic teratoma have a thickened capsule hence they do not rupture easily (24).

The other types of germ cell tumours are rare and often occur in association with other germ cell tumours. Primary choriocarcinoma of the ovary, may be gestational or non gestational. Pure non-gestational choriocarcinoma of the ovary is extremely rare though it has been reported (25).

The ovary is also capable of developing a heterogenous group of tumours that are not unique to it. These tumours are thought to arise from the supporting tissues and pose difficult problems in diagnosis, histogenesis, and therapy. They have to be differentiated from primary ovarian tumours containing

mesenchymal tissue, as well as from metastatic neoplasms affecting the ovary (2,3).

Primary malignant lymphomas of the ovary are extremely rare. Lack of lymphocytic aggregates in the ovary has raised doubts as to the actual existence of primary ovarian lymphomas (26). Burkitt's lymphoma is the most common malignant lymphoma in which involvement of the ovary manifest itself clinically.

Metastatic ovarian tumours may originate from a variety of organs and tissues outside the female genital tract, but the most common tumours to metastasize to the ovary originate from the intestines, stomach, breast, and haemopoietic tissue (27). The incidence of metastatic tumours varies due to the differences in types of studies done whether autopsy findings and/or surgical specimen.

Quality control and quality assurance programmes are designed to improve the accuracy of diagnosis. It has been demonstrated that if there is consistency of intraobserver diagnosis and if there is interobserver agreement with a group of pathologist, the diagnosis is more likely to be correct than if there is poor interobserver agreement or interobserver variation (28).
Accepted standards for a 'correct diagnosis' can be that made by recognized experts, a high concensus dignosis by a group of

ten to twenty pathologist or based on biologic behaviour of the lesion (outcome). Factors that enhance accurate diagnosis are;- i. a well chosen biopsy to represent the lesion, properly fixed and with adequate clinical data provided. ii. proper examination of the gross by the pathologist with appropriate samples taken. iii. Good technical processing by adequately trained and experienced technologists who have available appropriate and other necessary resources needed for sectioning, staining and mounting. The above activities are objective and can therefore be controlled. These are referred to as the quality control aspect of the diagnostic process.

Quality assurance is the estimation of the accuracy and consistency (precision) of results. Interpretation of sections on the glass slides is a subjective value judgement, as are most professional decisions based on value judgements. The quality and accuracy of this diagnostic process depends on the training and experience of the reporting pathologist and the technical quality of the tissue preparation on the glass slide.

A quality assurance programme has both an internal and external component which are basically aimed at improving the diagnostic performance and hence quality patient care (28,29). The internal components of quality assurance in anatomic pathology includes well trained personnel of all cadres, surgical and autopsy specimens of good technical quality, pathologists

reports that meet the defined needs and performance evaluation using whatever means that are appropriate for the given setup.

The external component of a quality assurance programme is used to evaluate and compare the overall performance of several institutions. These provides assurance not only to the professionals and institutions but also to the public at large, that performance is being evaluated by independent bodies and identified deficiencies are corrected (28).

GENERAL OBJECTIVES.

The general objective of this study was to determine the normal ovarian variants and neoplastic lesions received and processed in the laboratory of histopathology KNH, and to also determine the technical quality of diagnostic material and the consistency of diagnoses. .

SPECIFIC OBJECTIVES.

1. To retrieve from histopathology records, the reports of all those cases reported as normal ovaries or their variances and neoplastic lesions of the ovaries within the period 1st January 1986 to 31st December 1990.
2. To review the histology of all such cases and classify them using the WHO classification.
3. To determine the number of the various ovarian neoplasm and the number of normal ovaries and their variances processed within the study period.
4. To determine the age distribution of the ovarian neoplasm.
5. To determine the technical quality of the sectioning and staining of the diagnostic glass slides.
6. To determine the interobserver variation of the diagnoses made.

MATERIALS AND METHODS

The laboratory files bearing duplicate histology records of all the ovarian tissue processed in the department of histopathology within the period 1st january 1986 to 31st december 1990 were identified and retrieved. The laboratory numbers of all cases recorded as normal ovarian tissue, their variances and neoplastic conditions were listed down. Corresponding histology slides were retrieved and assessed for suitability for microscopy. The tissue blocks of the cases with missing or unsuitable slides were retrieved and new slides made. Those cases with both slides and tissue blocks missing or with inadequate material were omitted from the study.

The gross description of those included into the study was noted. All the slides reviewed were stained with haematoxylin and eosin. Following the review of the recruited cases, a diagnosis was made without knowledge of the original diagnosis and compared with the original report. Where there was a discrepancy, the slides was reviewed a second time and a final diagnosis made.

The technical quality of each slide was assessed and graded as excellent, average quality, poor but diagnosable and very poor. The grading took into account the tissue fixation, sampling, dehydration, quality of mounting media, cutting, stain and the evaluationof the overall quality.

RESULTS

Two hundred and ninety eight (298) cases were included in the study. Of these 178 (60%) were grouped under normal ovaries and their variances and 120 (40%) were grouped under neoplastic lesions

The breakdown of the two groups was as follows:

Table 1: Normal ovaries and their variances.

Diagnosis	No of Cases
Corpus luteum	102 (57%)
Graafian follicles	16 (9%)
Simple cysts	8 (5%)
Normal ovary	52 (29%)
Total	178 (100%)

Cases recorded under normal ovary showed normal ovarian stroma with unremarkable follicles and corpora lutea.

Those grouped under corpus luteum and graafian follicles had the bulk of tissue showing the corresponding structure with minimal ovarian stroma. Cases recorded under simple ovarian cysts had benign features and had no identifiable epithelial lining.

Cystic corpus luteum represented 57% of all the normal variants, followed by normal ovaries 29% , cystic follicles 9% and simple cysts 5% .

Table 2: Tumours.

Diagnosis	No of Cases
Epithelial tumours	57 (47%)
Germ cell tumour	45 (38%)
Sex cord - Stromal cell tumour	16 (13%)
Lymphoma	2 (2%)
Total	120 (100%)

A total of 120 neoplasm were analyzed. Epithelial tumours comprised the largest group 47% followed by the germ cell tumours 38% , sex cord-stromal tumours 13% and the lymphomas 2%

The 4 categories of tumours were analyzed for the specific tumour types and the results were as follows;

Table 3: Epithelial tumours

Type of tumour	No of Cases
Serous	
Cystadenoma	7
Papillary cystadenoma	4
Adenofibroma	5
Cystadenoma borderline	4
Cystadenocarcinoma	8 (49%)
Mucinous	
Cystadenoma	8
Cystadenoma borderline	1
Cystadenocarcinoma	2 (19%)
Endometrioid adenocarcinoma	2 (4%)
Brenner tumours	3 (5%)
Anaplastic carcinoma	8 (14%)
Infiltrating adenocarcinoma	5 (9%)
TOTAL	57 (100%)

Serous tumours were the commonest of the epithelial tumours comprising 49% , followed by the mucinous tumours 19%, endometrioid tumours 4% were the least commonest. Anaplastic tumours together with infiltrating adenocarcinomas comprised 23% of these tumours.

Table 4 : Germ cell tumours

Type of tumour	No of Cases
Dysgerminoma	3 (7%)
Endodermal sinus tumour	1 (2%)
Benign cystic teratoma	39 (89%)
Struma Ovarii	1 (2%)
Total	44 (100%)

Out of the 44 germ cell tumours seen, benign cystic teratomas formed the largest group (89%), followed by the dysgerminomas (7%) with one each of endodermal sinus tumour and struma ovarii.

Table 5: Sex Cord- Stromal cell tumours

Type of tumour	No of Cases
Granulosa cell	7 (44%)
Thecoma	3 (19%)
Fibroma	2 (12%)
Leydig cell (hilar cell)	3 (19%)
Sertoli - Leydig cell tumour	1 (6%)
TOTAL	16 (100%)

These were a total of 16 sex cord-stromal cell tumours. Granulosa cell tumours were the commonest 44% .

Table 6: Mixed Germ cell and Sex cord-Stromal tumours

Type of tumour	No of Cases
Gonadoblastoma	1

Table 7:Lymphoma

Type	No of cases
Burkitts	1
Lymphoma(unclassified)	1
TOTAL	2

The age distribution of the tumour types was as follows:

Table 8: Epithelial tumours

Age in yrs	0-10	11-20	21-30	31-40	41-50	51-60	>60	U^
Serous Cystadenoma & papillary cystadenoma	-	1	3	1	-	2	-	4
Serous Cystadeno-fibroma	-	1	2	2	-	-	-	-
Serous border line & cyst adenoca.@	-	-	1	5	2	2	1	1
Mucinous Cystadenoma	-	-	5	-	1	1	-	1
Mucinous B/L* &adenoca. @	-	-	-	-	1	1	1	-
Endometrioid Carcinoma	-	-	1	-	-	-	-	1
Brenner Tumour	-	-	-	-	-	-	2	1
Anaplastic Carcinoma	1	-	1	-	2	-	2	2
Infiltrating adenoca. @	-	-	2	-	2	-	-	1
TOTAL	1	2	15	8	8	6	6	11

* B/L stands for border line.
@ Adenoca stands for adenocarcinoma.
U^ Stands for unknown

A total of 57 epithelial tumours were analyzed for age, the 21-30 year group had the largest number of cases 15 (26%),

followed by the unknown 11 (19%) The unknown included all the cases recorded as adults and those without any age given.

Table 9:Germ cell tumours and mixed Germ cell sex cord - stroma tumour

Age in years

Tumour type	0-10	11-20	21-30	31-40	41-50	51-06	>60	U^
Dysgerminoma	-	-	-	-	-	-	-	3
Endodermal Sinus tumour	-	1	-	-	-	-	-	-
B/cystic * teratoma	1	7	16	4	-	2	-	9
Struma ovarii	-	-	-	-	1	-	-	-
Gonadoblasto	1	-	-	-	-	-	-	-
TOTAL	2	8	16	4	1	2	-	12

* B/cystic stands for benign cystic.
U^ stands for unknown.

The 21-30 age group had the largest number of cases 16(36%), followed by the unknown 12(27%).

Table 10: Sex Cord - Stromal cell tumour.

age in years.

Tumour type	0-10	11-20	21-30	31-40	41-50	51-60	>60	U^
Granulosa	-	-	3	-	-	2	-	2
Thecoma	-	-	2	-	-	-	-	1
Fibroma	-	-	1	-	-	-	-	1
Sertoli/L *	-	-	1	-	-	-		-
Leydig(Hilus)	1	2	-	-	-	-	-	-
TOTAL	1	2	7	0	0	2	0	4

* Sertoli/L represents sertoli/Leydig
U^ stands for unkown.

The 21-30 year group had the largest number of cases 7(44%), the unknown followed with 4(25%).

The two lymphoma cases had no ages indicated in the histology request forms.

Table 11:Quality of technical preparation.

Grading	No of Cases
Very poor	8 (3%)
Poor/diagnosable*	93 (31%)
Average quality	191 (64%)
Excellent	6 (2%)
Total	298(100%)

* Should read 'poor but diagnosable'.

In the above grading, the grade very poor refers to slides in which interpretation was made with a lot of difficulties due to a number of technical defects. Excellent implied that the preparation was close to ideal. Poor but diagnosable implied that the slide could be diagnosed but often required a great deal of time. Average quality refers to slides that were better than "diagnosable " often there were multiple slides which varied considerably in quality but examination of a number of the slides provided a reasonable quality for diagnosis.

Table 12:Interobserver variation.
Original diagnosis versus second diagnosis.*

Diagnosis	cases
Benign lesion-normal ovary/variances	28(42%)
Benign tumours-benign mainly tumours	11(16%)
Malignant tumours-malignant tumours	8(12%)
Malignant tumours-borderline tumours	2(3%)
Malignant tumours-benign tumours	6(9%)
Benign lesion-malignant tumour	1(2%)
Malignant tumours-normal ovaries	2(3%)
Sex cord stromal tumours **	9(13%)
Total	67(100)

*See appendix 2 for further details.

**There were nine tumours in this group with different diagnoses. Seven of these had an original diagnosis of granulosa theca cell tumours with five having a second diagnosis of granulosa cell tumour and two having a second diagnosis of thecoma. The final two, one had an original diagnosis of sex cord tumour with annular tubules whereas the second diagnosis was gonadoblastoma, and the last one was originally diagnosed as fibroma with a second diagnosis of thecoma.

The benign - normal category comprising 42% was the largest group with differing diagnoses

DISCUSSION.

The ovary under the influence of gonadotrophins under goes cyclic changes that result in phenomena that can be mistaken clinically for neoplasms. Pelvic ultra sound of sexually mature females commonly shows unilocular cystic ovarian structures usually less than 8cm in diameter that are follicular in origin, these cystic structures regress with time (30). At laparotomy, other cystic structures that are of corpus luteum origin may be encountered. These types of cystic structures should almost always be macroscopically recognisable because of their characteristic yellow colour and occasional haemorrhagic contents. The ability to differentiate normal variations of ovaries from tumours will depend on the training and experience of the gynaecologist.

In this study, 60% of the cases were reported as variations of normal ovaries. Nineteen of the fifty two normal ovaries processed, were submitted together with hysterectomy specimens most of which were removed for leiomyomata. In a number of cases where laparotomy was done for an ectopic pregnancy, the surgeon presumably considered corpus luteum of pregnancy in the opposite ovary as a tumour or neoplastic cysts and removed it. Haemorrhagic corpus luteum may clinically be mistaken for an endometriotic cysts though none was encountered in this study. The majority of the cases with normal ovaries or their variants were in the reproductive age group.

Cystic corpora lutea were the most commonly encountered normal ovarian variants which is consistent with the majority of the patients being in their reproductive age group.

Two previous studies done by Ojwang and Machira on patients admitted to Kenyatta national hospital (31,32), also found common epithelial tumours to be the commonest types.
Of the epithelial tumours, the serous tumours (49%) were the commonest which is similar to that reported in the two previous studies mentioned above. The anaplastic and infiltrating adenocarcinoma of unidentifiable pattern together formed the second largest group (23%). Due to incomplete data recorded in the laboratory files, it was not possible to determine the proportion of these tumours that were metastatic. Endometrioid tumours were the least common. The data available did not provide evidence suggestive of a concomitant tumour in the endometrium.

Germ cell tumours comprised 38% of the cases. These were the second commonest and similar to that reported in the literature. Of the germ cell tumours in this study, Benign cystic teratomas were the majority (89%), which is in contrast to Machira's study which reported dysgerminoma as the commonest germ cell tumours (32). These tumours in the current study were also the commonest neoplasm which is in agreement with other studies (22).

There was no single case of malignant teratoma reported within the study period. Germ cell tumours were reported in all the age groups with the exception of those over 60 years. The youngest case of a benign cystic teratoma is reported in literature to have occurred in a three month old baby (33).

Sex cord-stromal tumours comprised 13% of all the tumours. The commonest type was the granulosa cell tumour (44%) and all the cases had varying amounts of theca cells. The majority of these tumours showed a diffuse histologic pattern with poorly formed or no Call-Exner bodies. These tumours are said to occur at any age including stillborn though the majority occur in the post menopausal women (34). Three of the cases were in the 21-30 age group, two were in the 51-60 age group and the age of two cases were unknown . Granulosa cell tumours may also be found in clinically normal ovaries (35). There were three cases that had only theca cell and were reported as thecoma.
Leydig cell tumours were 19% of all the sex cord-stromal tumours and were seen in patients under 20 years of age.
The majority of the sex cord-stromal tumours were seen in the 21-30 age group.

Out of the 120 tumours reviewed, the largest number of patients (32%) were in the 21-30 year group followed by patients unknown age (21%). The under 10 year group had the least number of patients (3%).

Out of the 278 cases analyzed 67 had different diagnoses resulting in an interobserver variation of 24% . The majority of these cases (45%), had a diagnosis of a benign lesion in the original report and a second diagnosis of normal ovary. The main problems relating to consistency of pathologist diagnosis appears to due to 'is a cystic corpus luteum normal or is it a pathologic corpus luteum cyst', the use of a standard terminology (classification), and recognizing the differences between graafian follicle and corpus luteum. When pathologist persist in calling normal cystic structures cysts, it perpetuates the belief at the clinical level that removing all cystic lesions is the proper treatment.

Eighteen percent of the cases with differing diagnoses had both diagnoses reported as benign but of different types. There did not appear to be any pattern or reason for the interobserver variation. In a few of the cases the original diagnosis may have been made on a slide not available for the second diagnosis.

Ten percent of the cases had both the diagnoses reported as malignant but differed in the tumour types. This group reflects the fact that the best interobserver agreement is achieved in common lesions and in the case of neoplasms between benign and malignant. In a large series of breast lesions, there was 98% agreement in the diagnostic placing of lesions into the two

categories of benign and malignant. There was considerable disagreement on the definitive classification in each group (28).

Two of the cases were originally reported to be malignant but the second diagnosis was borderline.

Six (9%) of the cases were diagnosed initially as malignant. The second diagnosis was benign. Four of the above cases with initial diagnosis of malignant tumour were called the benign counterpart. The other two cases were called benign of a different tumour type.

Only one case was initially reported as benign with the second diagnosis being a malignant tumour, a case of endometrioid carcinoma.

Two cases originally reported as malignant had a second diagnosis of normal ovary.

The technical quality of the majority of the slides examined (64%) were graded as average technical quality and only 2% were graded as excellent. This was attributed to the low quality of the reagent used. Of the remaining 34% , diagnosis was only possible after a considerable amount of time was spent on the slides.

The majority of the slides examined were newly prepared by one individual but the original slides had been prepared by various members of the technical staff in the histopathology laboratory within the study period.

CONSTRAINTS.

1. Poor filing and storage facilities of both the histology slides and paraffin embedded tissue blocks resulted in undue delay in their retrieval with misplacement of some and hence 109 (27%) of the total recorded cases had to be omitted from the study.This almost certainly created a bias of the data compiled.
2. Use of poor quality reagents resulted in histology slides whose use was limited in terms of time and cannot be used for comparative study in the future.
3. Illegible and incomplete clinical data on the patients request forms limited the usefulness of the results generated and created a bias. Based on this study and the day to day evaluation, the gross description of the tissues submitted were generally very brief and inadequate to be of value in coming to a definitive diagnosis.
4. Inadequately sampled and bad fixation of tissue created difficulties in diagnosis in some of the cases.

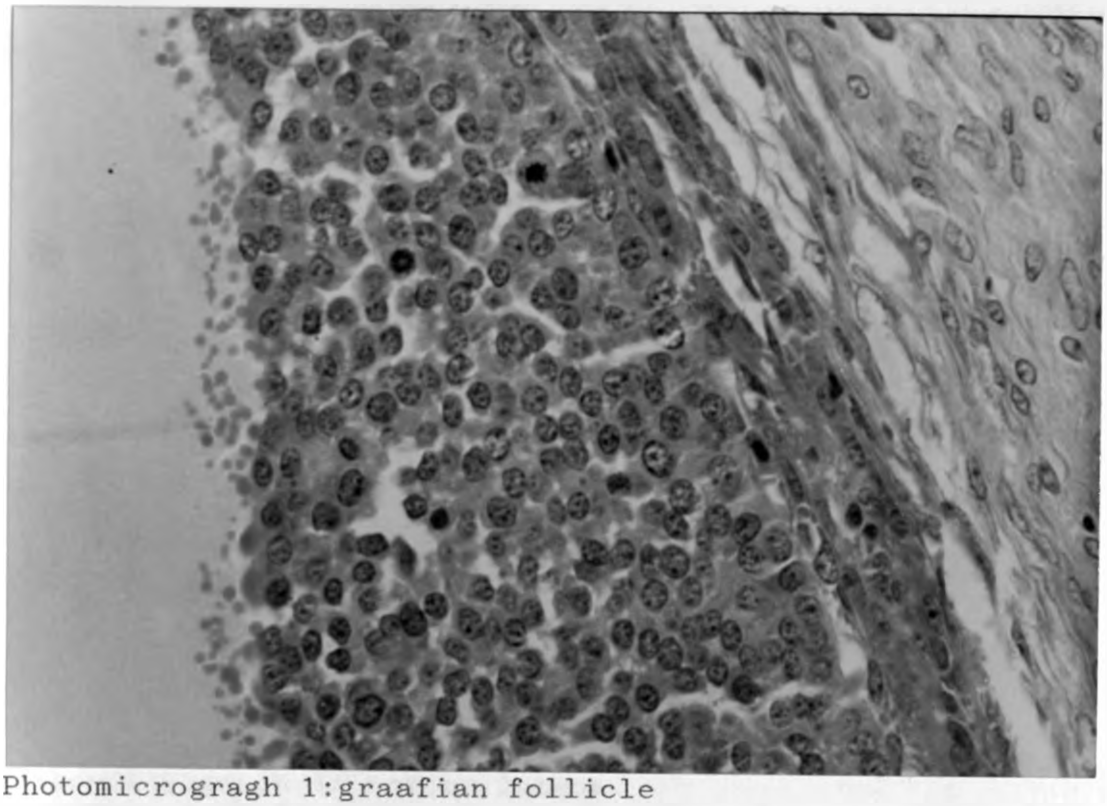
CONCLUSIONS.

1. Too many normal ovaries are being removed.
2. There is a high degree of interobserver variation within the department.
3. There is need for a technical quality control program and a quality assurance program within the department of human pathology including the use of a standard nomenclature in order to achieve a greater degree of consistency of diagnosis.

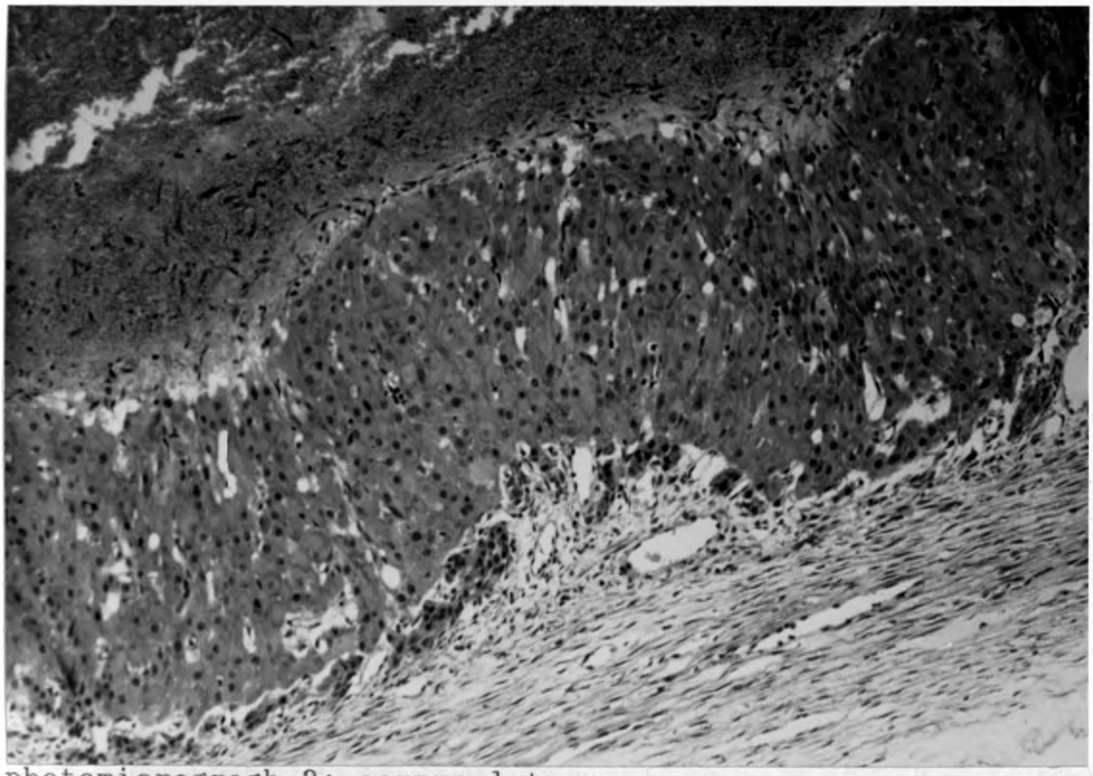
RECOMMENDATIONS:

1. Improvement of the filing and storage facilities, with the slides and tissue blocks preferable stored in a separate room from the main laboratory. This would ensure easy and complete retrieval not only for case studies but also for day to day diagnoses.
2. Use of adequate quality reagents would in the long run be more economical. This would eliminate the need to reprocess tissue blocks except in breakages.
3. Collaboration with the department of obstetric and gynaecology on means of minimizing the number of normal ovaries removed at laparotomy. If necessary a collaborative study relating clinical, intra operative and microscopic finding could be carried out, especially for clinical identification of normal variances of cystic ovarian structures which created the largest number of problems.
4. Introduce a consistency of nomenclature and the reporting language within the Department of human pathology.
5. Feedback to and encouragement of the technical staff to maintain a high standard of technical quality slide preparation.

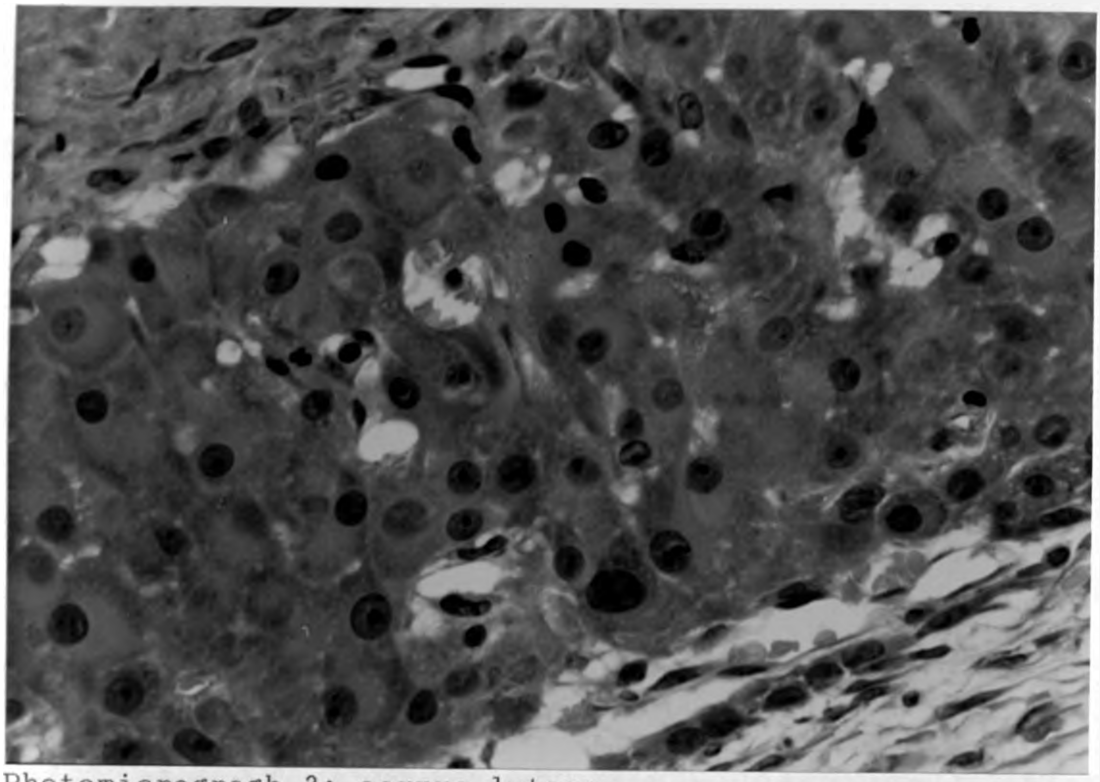
6. Introduction of an internal quality assurance programme in surgical pathology and cytology. Introduction of a national quality assurance program that would involve all the laboratories and practising pathologist within Kenya. Ideally the initiation of an external quality assurance program involving East, Central and Southern Africa would enhance the quality of patient care.



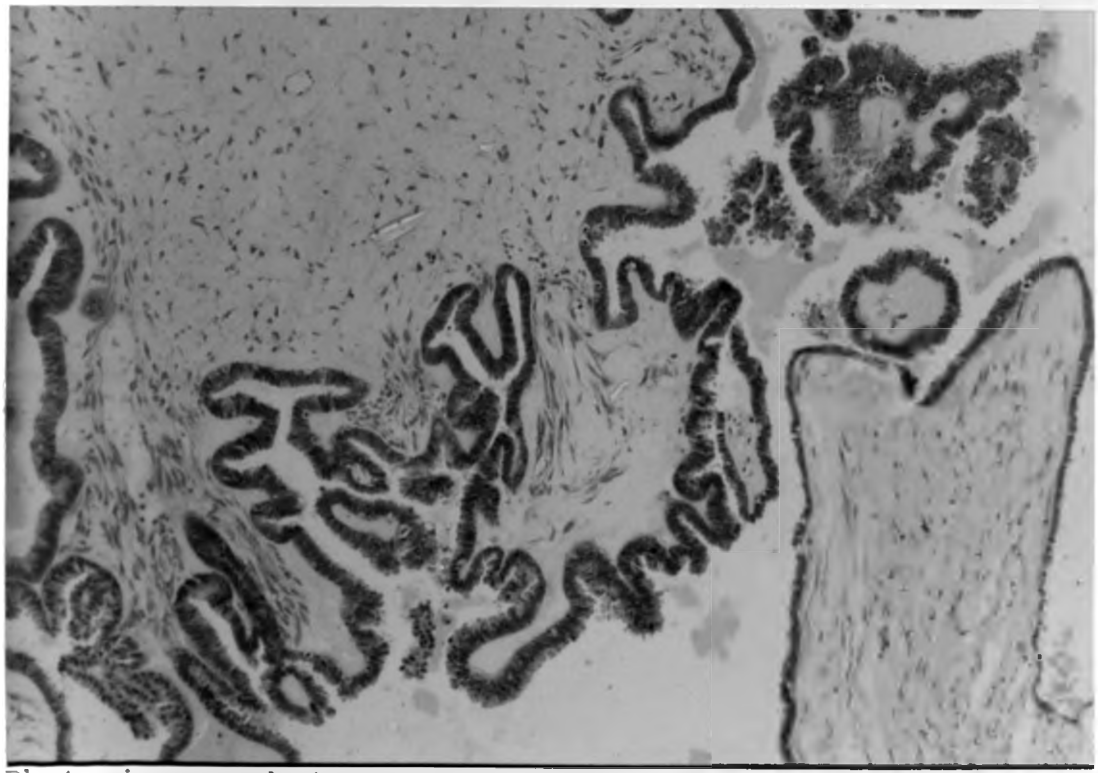
Photomicrogragh 1:graafian follicle
granulosa cell occupy the upper three quarters with mitoses near the top x400.



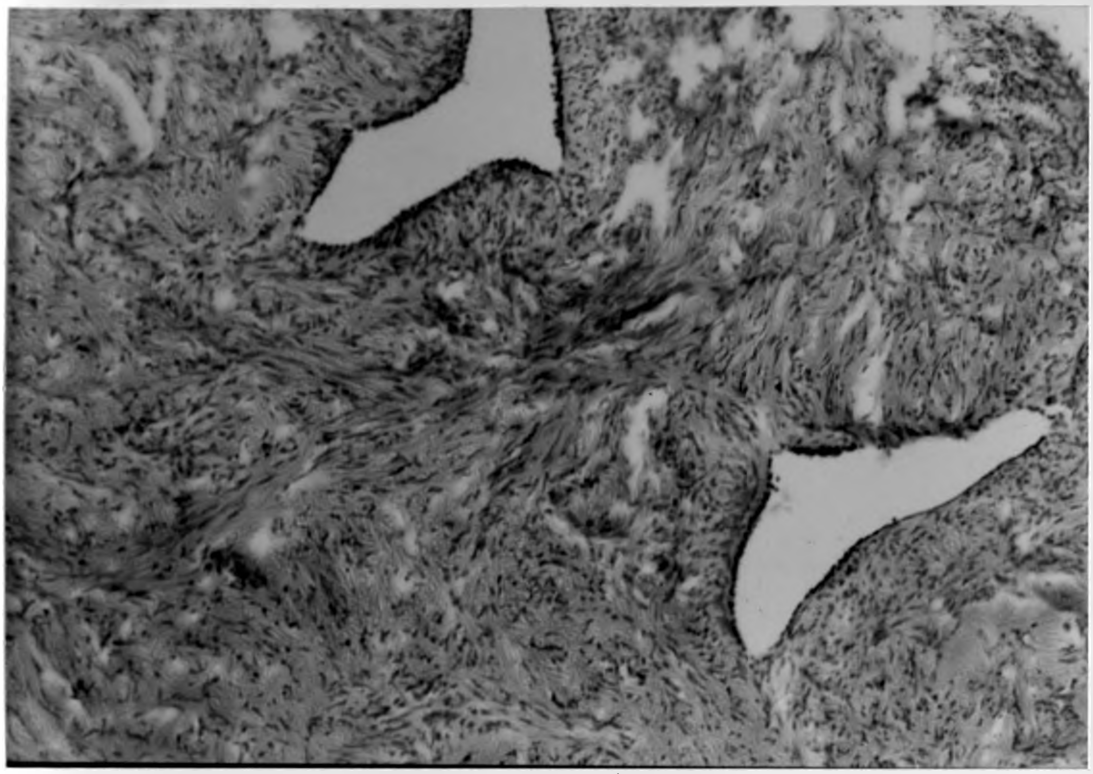
photomicrogragh 2: corpus luteum.
A well formed layer of granulosa lutein cells and theca lutein cells. There is haemorrhage in the center of the corpus luteum (top left) x100.



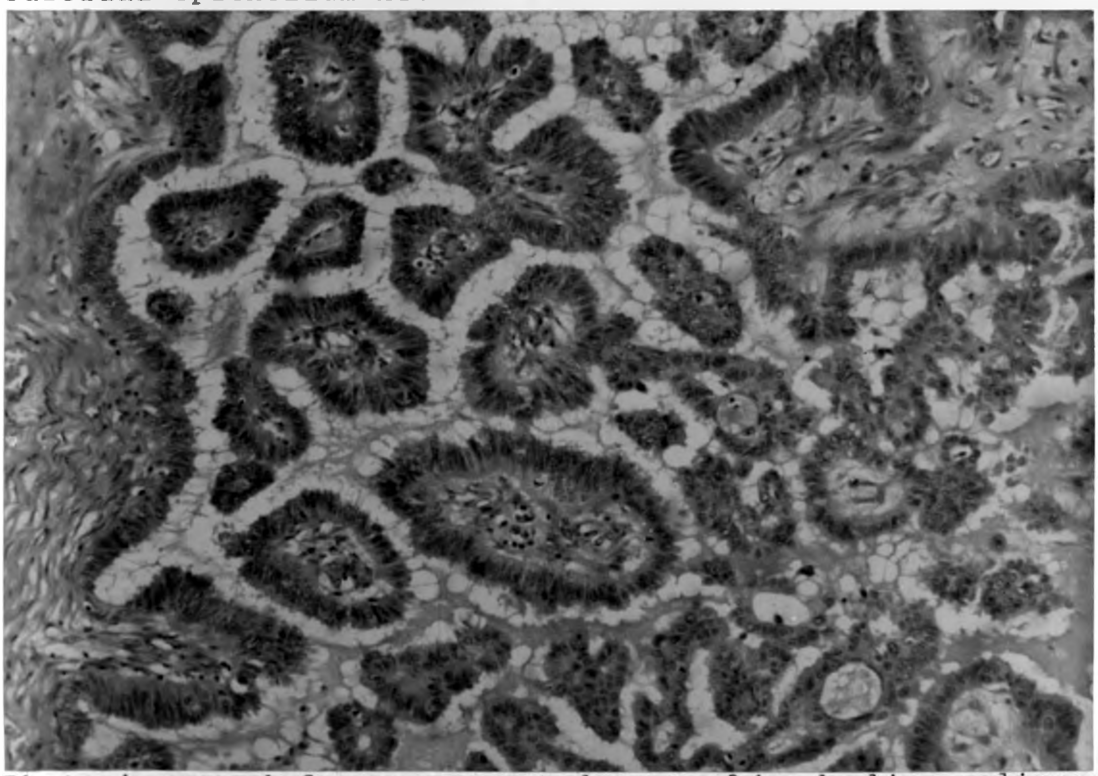
Photomicrogragh 3: corpus luteum.
A higher magnification of the granulosa lutein cells x400.



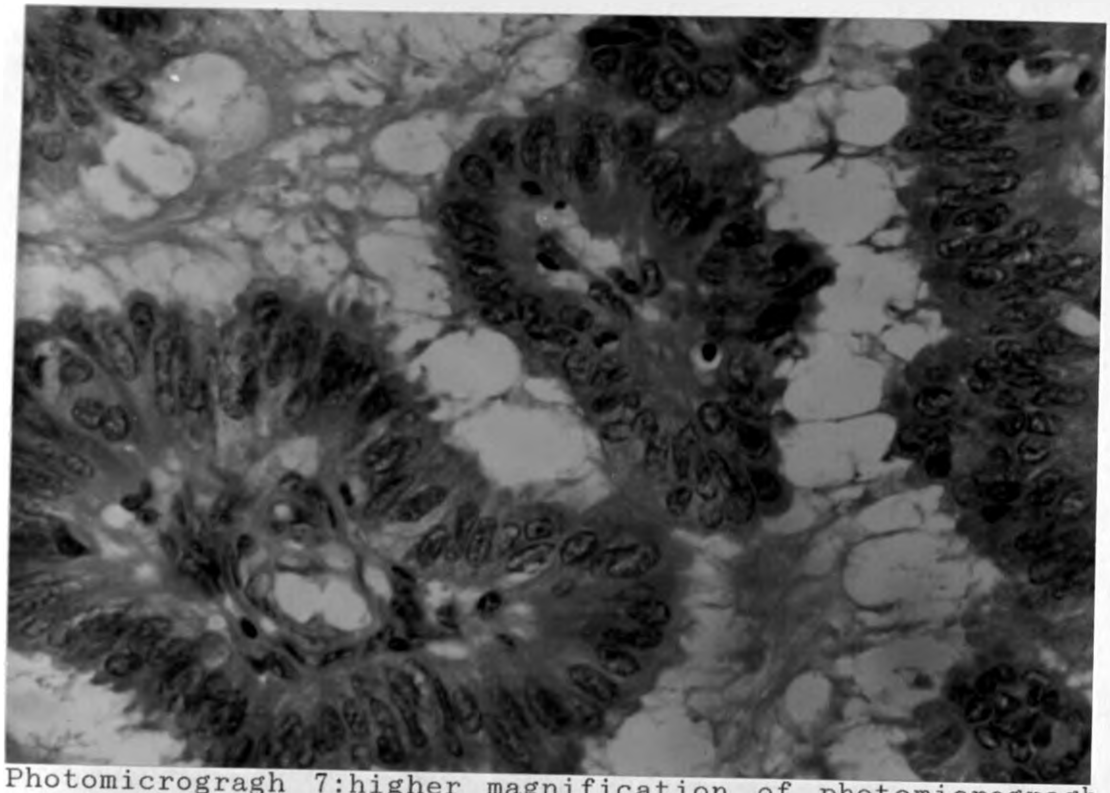
Photomicrogragh 4: serous cystadenoma x100.



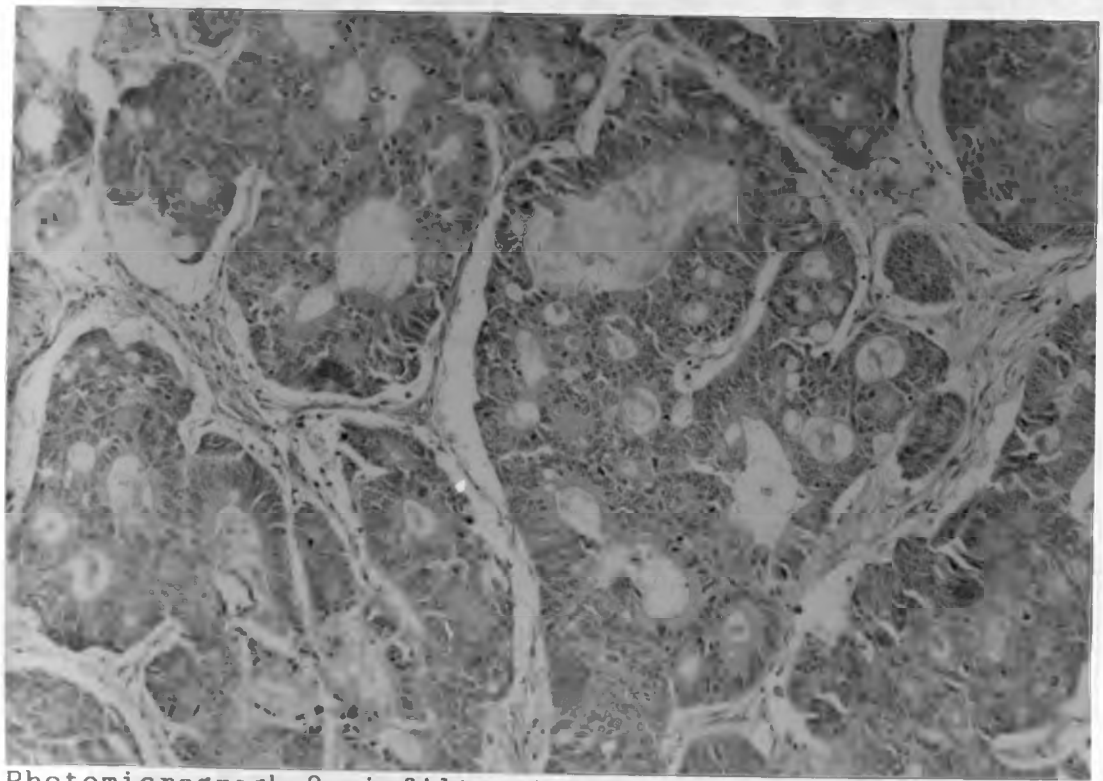
Photomicrograph 5: serous adenofibroma.
Fibrous stroma with cystic glands lined by a single layer of cuboidal epithelium x100.



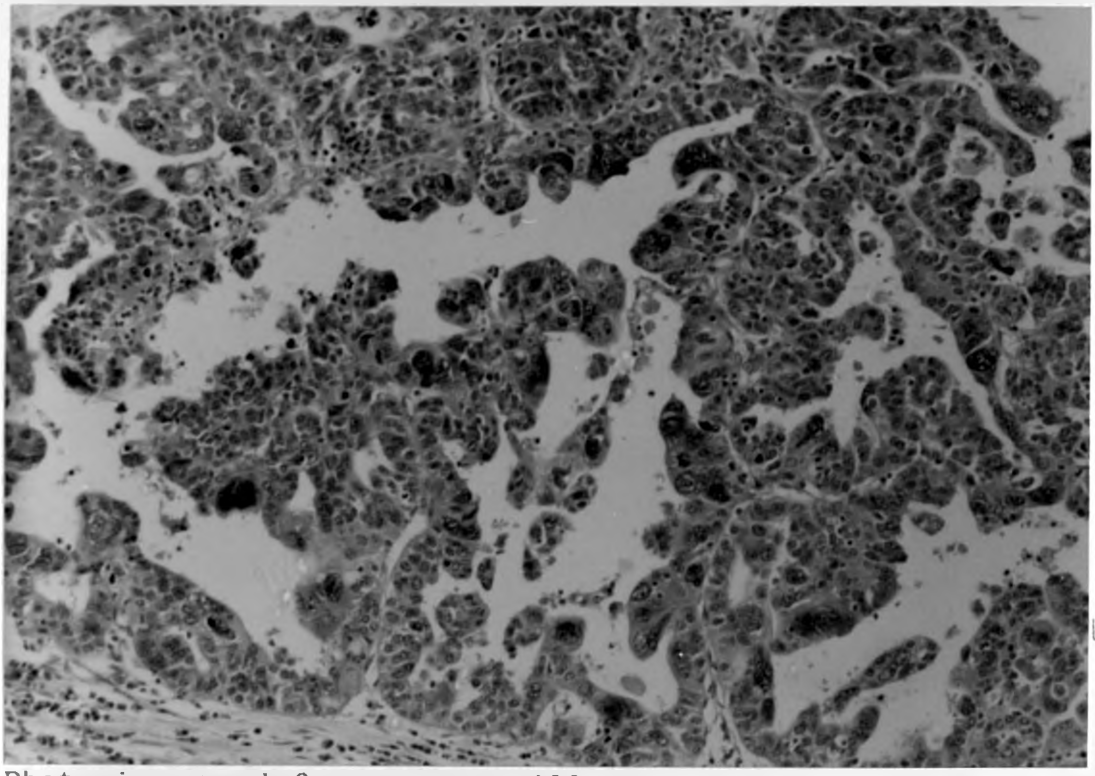
Photomicrograph 6: serous cystadenoma of borderline malignancy x100



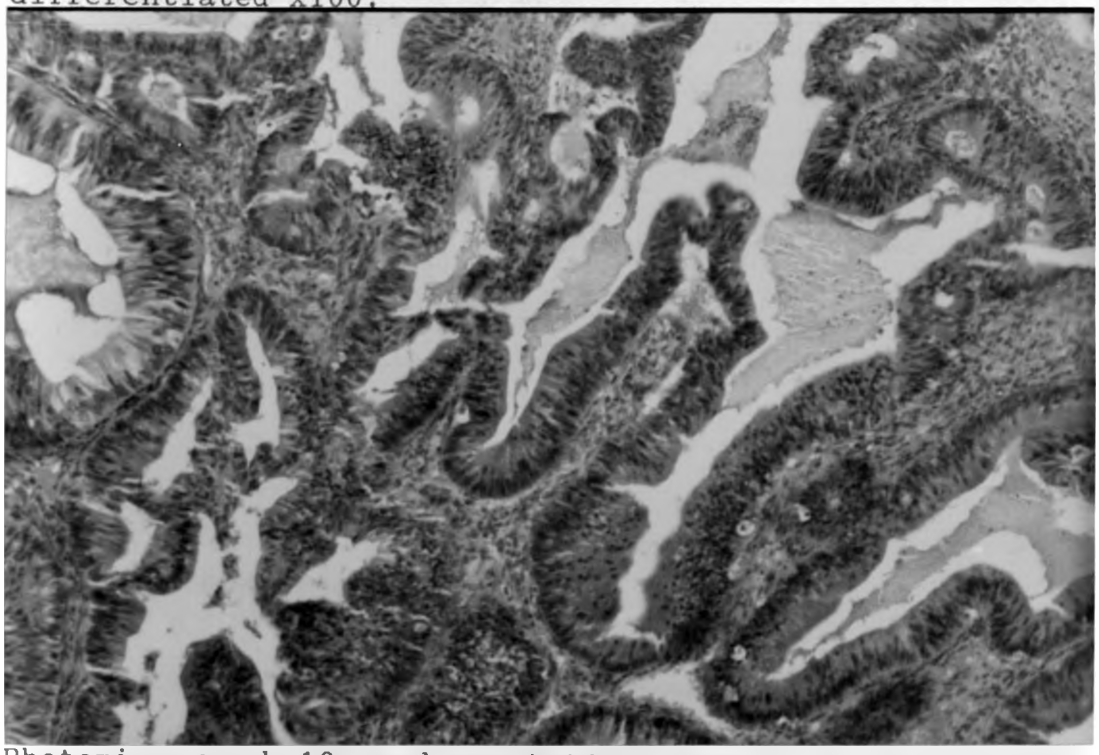
Photomicrogragh 7:higher magnification of photomicrogragh 6 x400



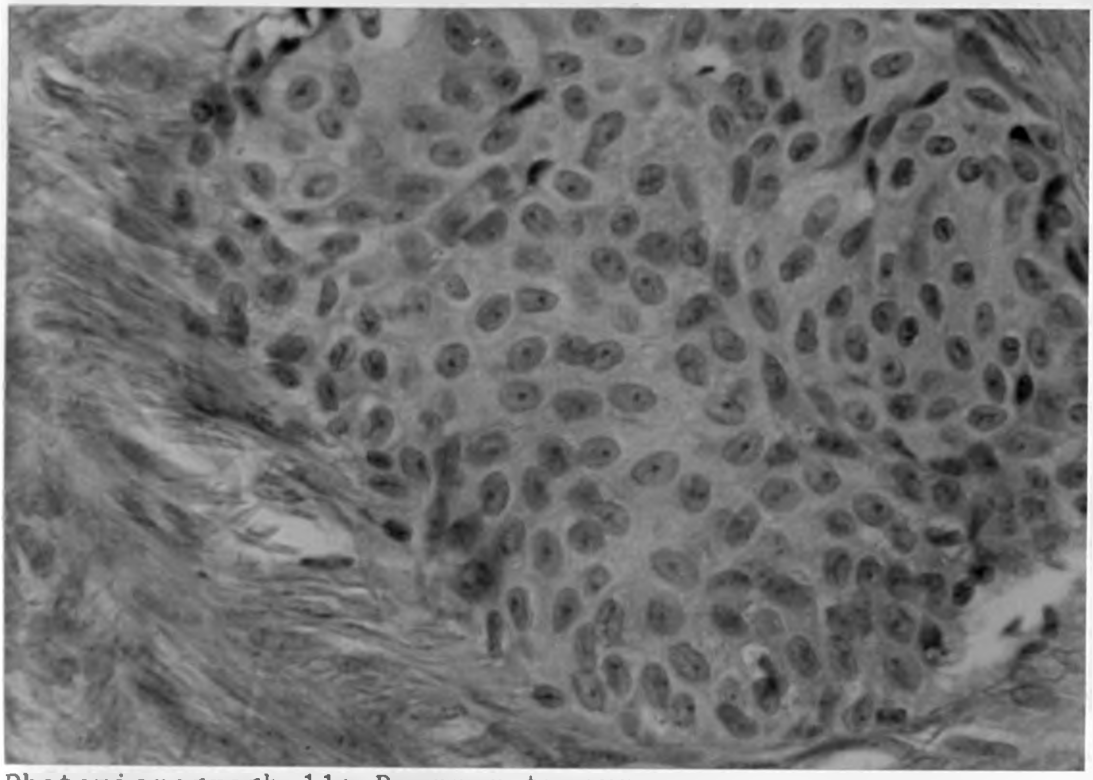
Photomicrogragh 8: infiltrating serous adenocarcinoma x100.



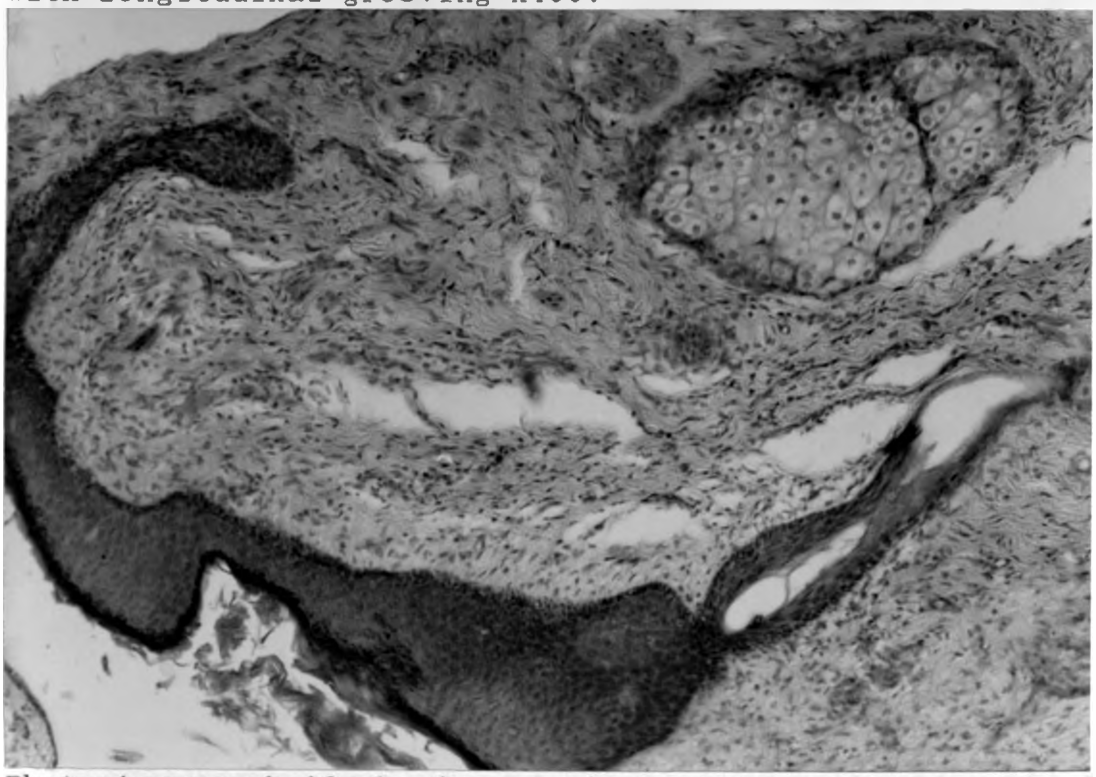
Photomicrograph 9: serous papillary cystadenocarcinoma, poorly differentiated x100.



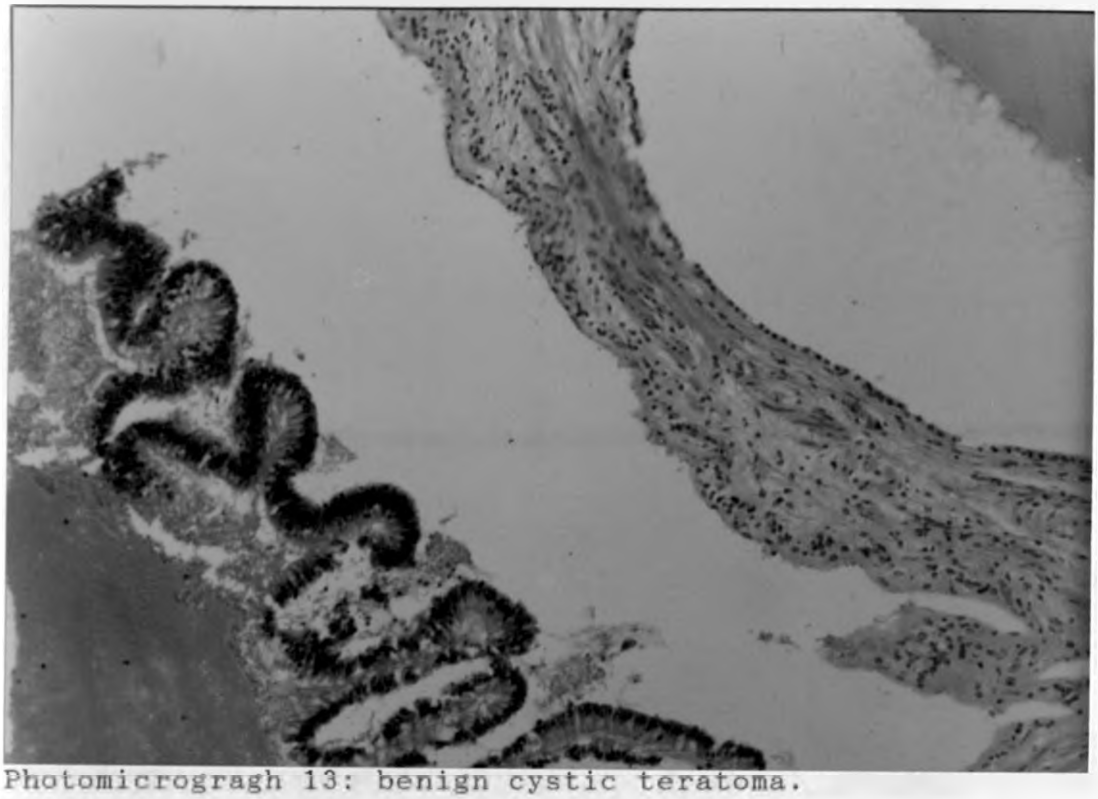
Photomicrograph 10: endometrioid carcinoma.
Glands lined by pseudostratified epithelium resembling that of carcinoma of the endometrium x100.



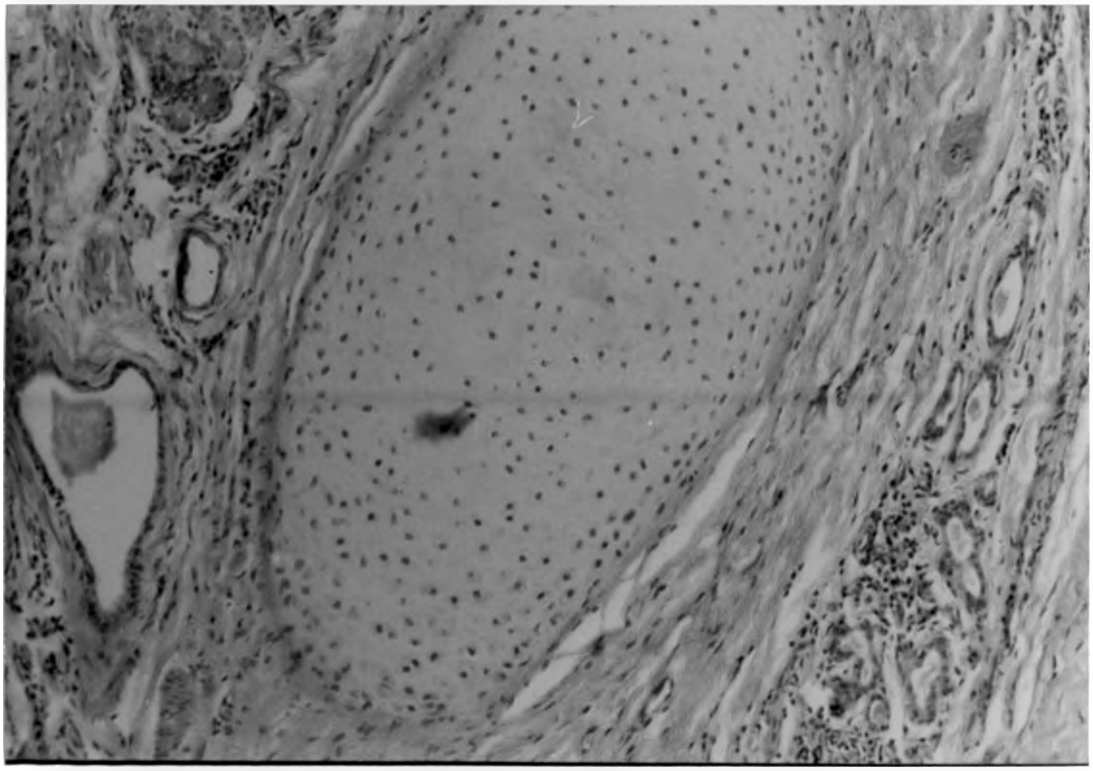
Photomicrograph 11: Brenner tumour.
Epithelial cell with ovoid nuclei, prominent nucleoli and a few with longitudinal grooving x400.



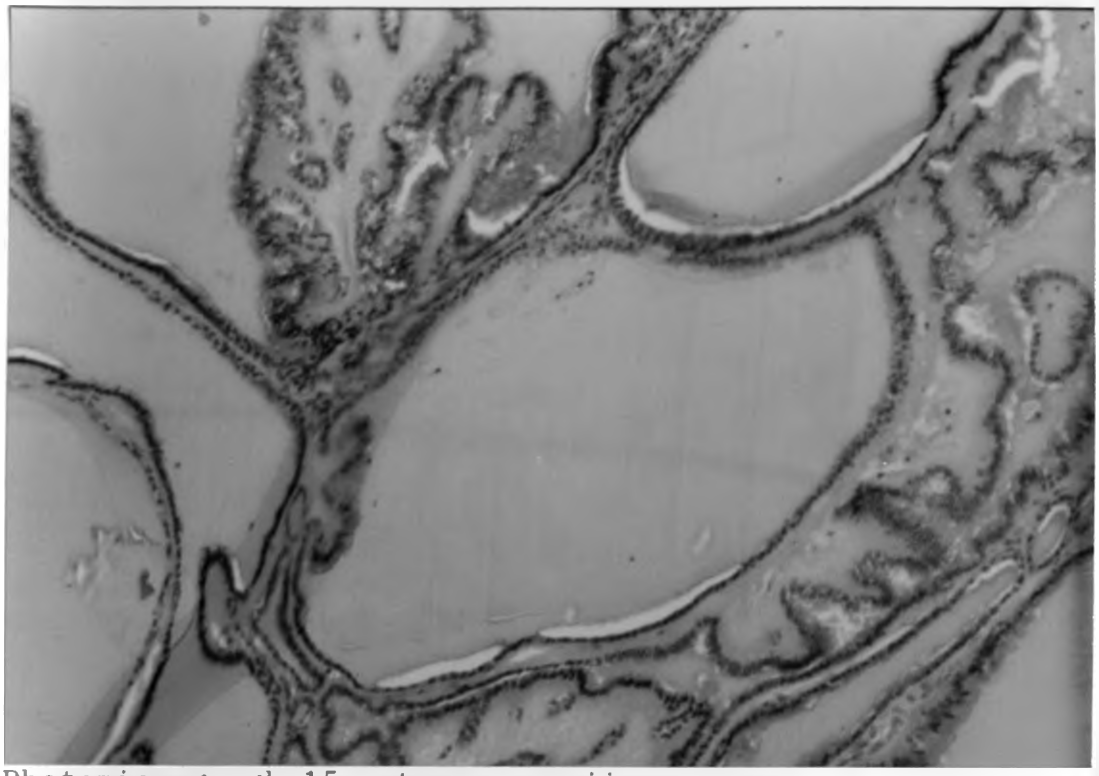
Photomicrograph 12: benign cystic teratoma.
Epidermis with a sebacious gland x100.



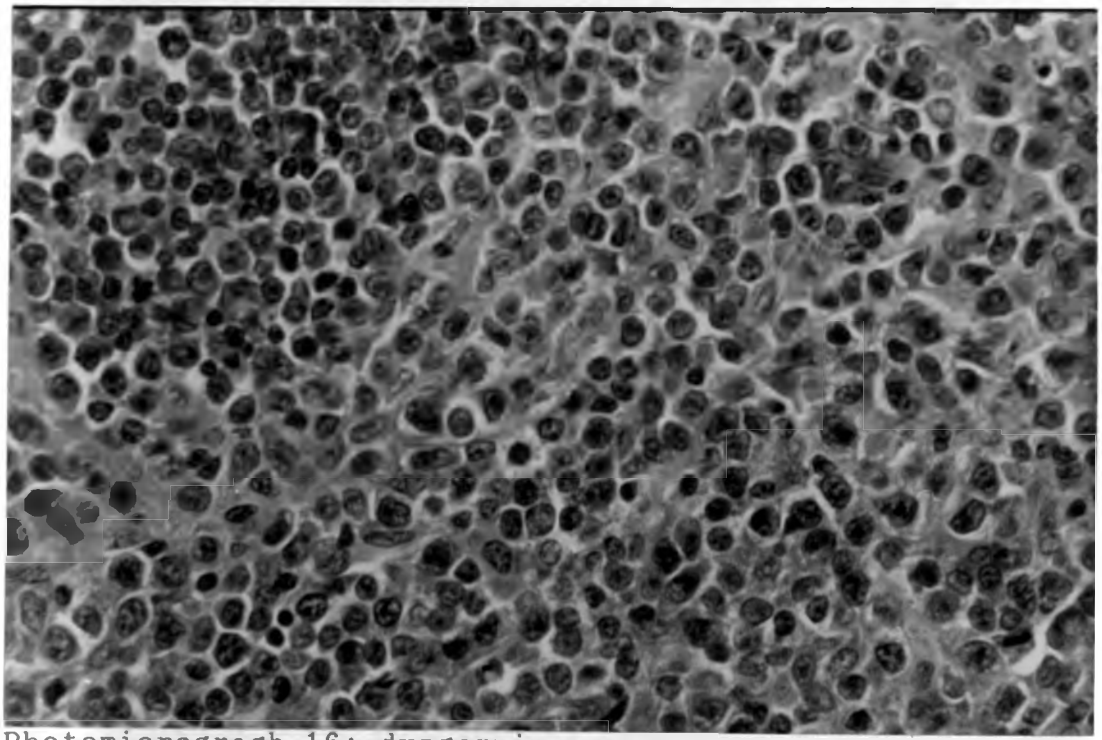
Photomicrogragh 13: benign cystic teratoma.
Respiratory epithelium and the wall of a cystic space lined by cuboidal epithelium x100.



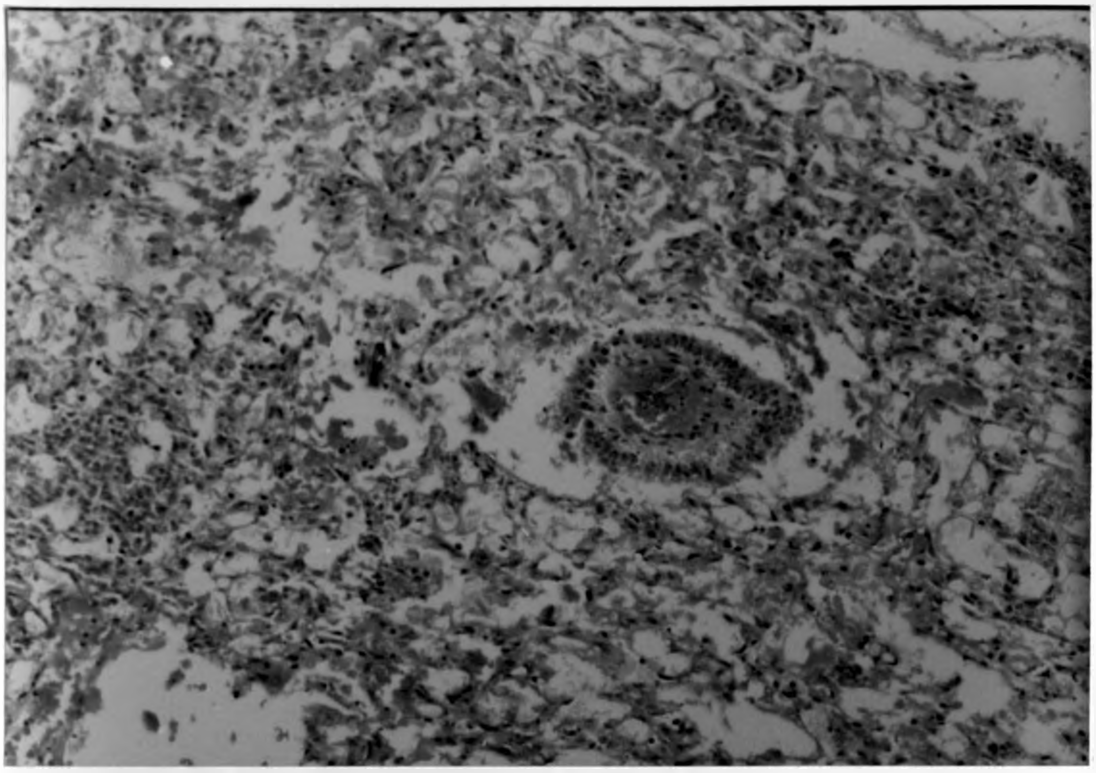
Photomicrogragh 14: benign cystic teratoma.
Mature cartilage with glandular spaces on both sides lined by epithelium, note a focus of salivary glands (top left) x100.



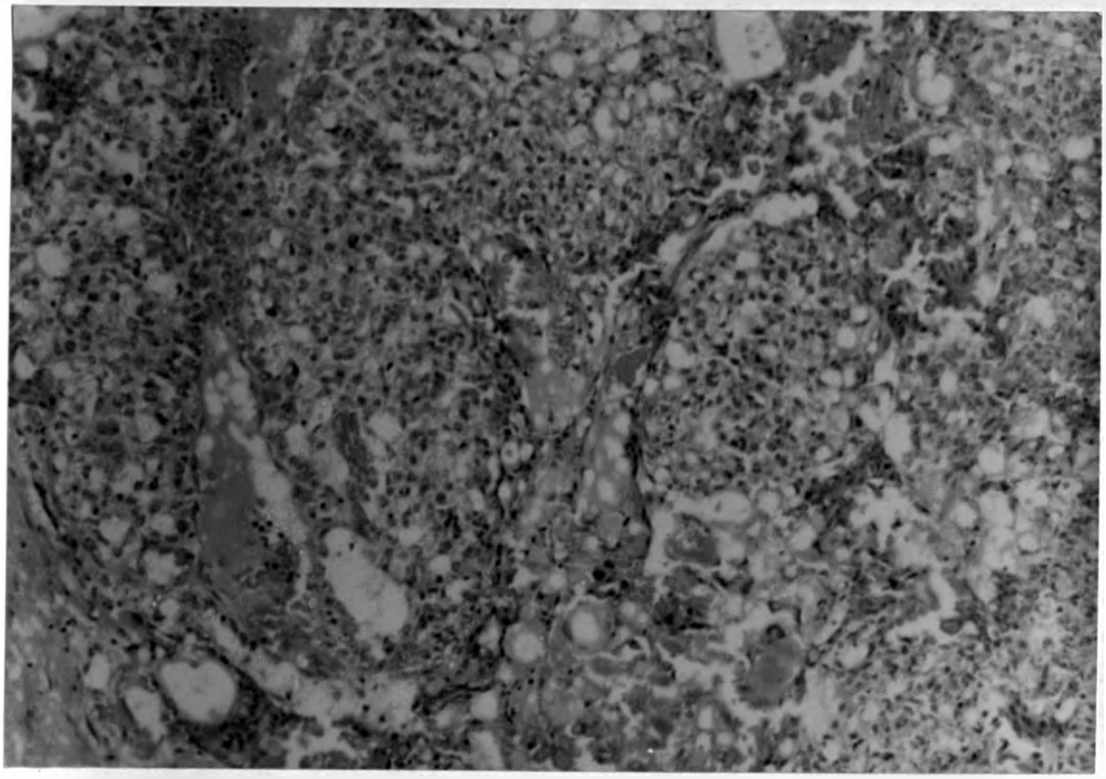
Photomicrogragh 15: struma ovarii
Note papillary pattern and glandular space filled with colloid material x100.



Photomicrogragh 16: dysgerminoma
Malignant cells with round nuclei and a prominent nucleoli. A few lymphocytes are scattered among the tumour cells, best seen in the top left corner x400.

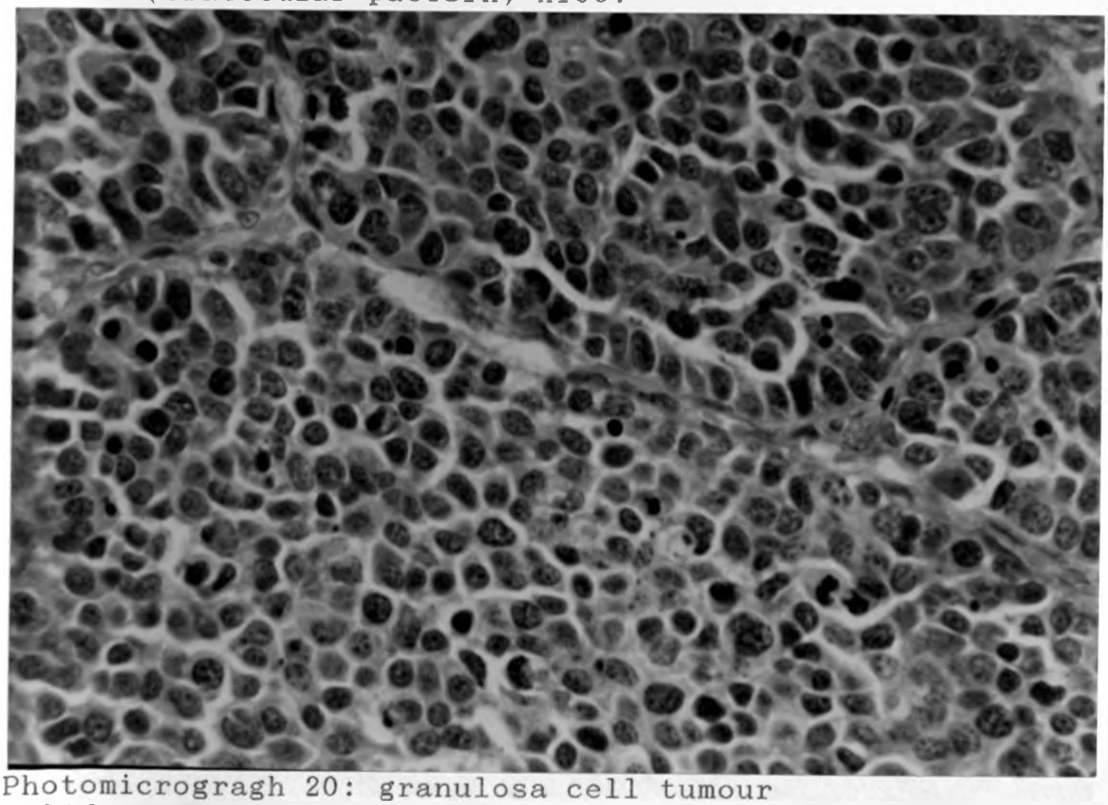


Photomicrogragh 17: endodermal sinus tumour
Reticular pattern with a Schiller-Duvall body x100.

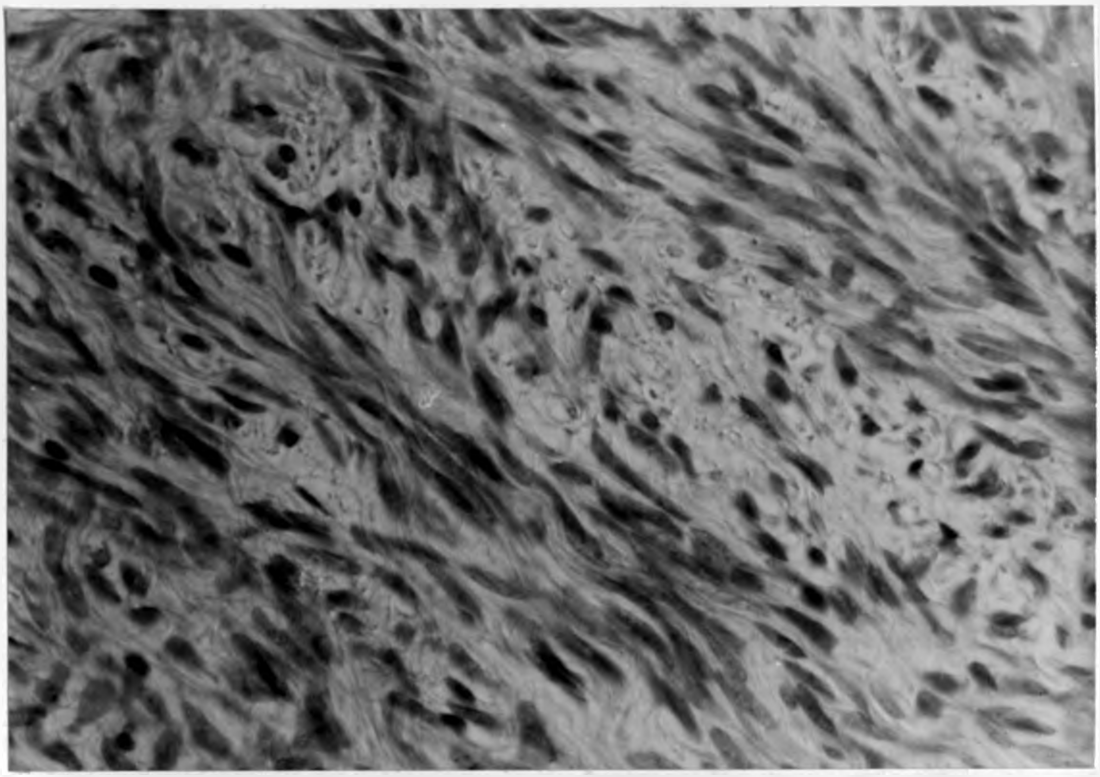


Photomicrogragh 18: endodermal sinus tumour
Note the pale red solid homogeneous hyaline bodies x100.

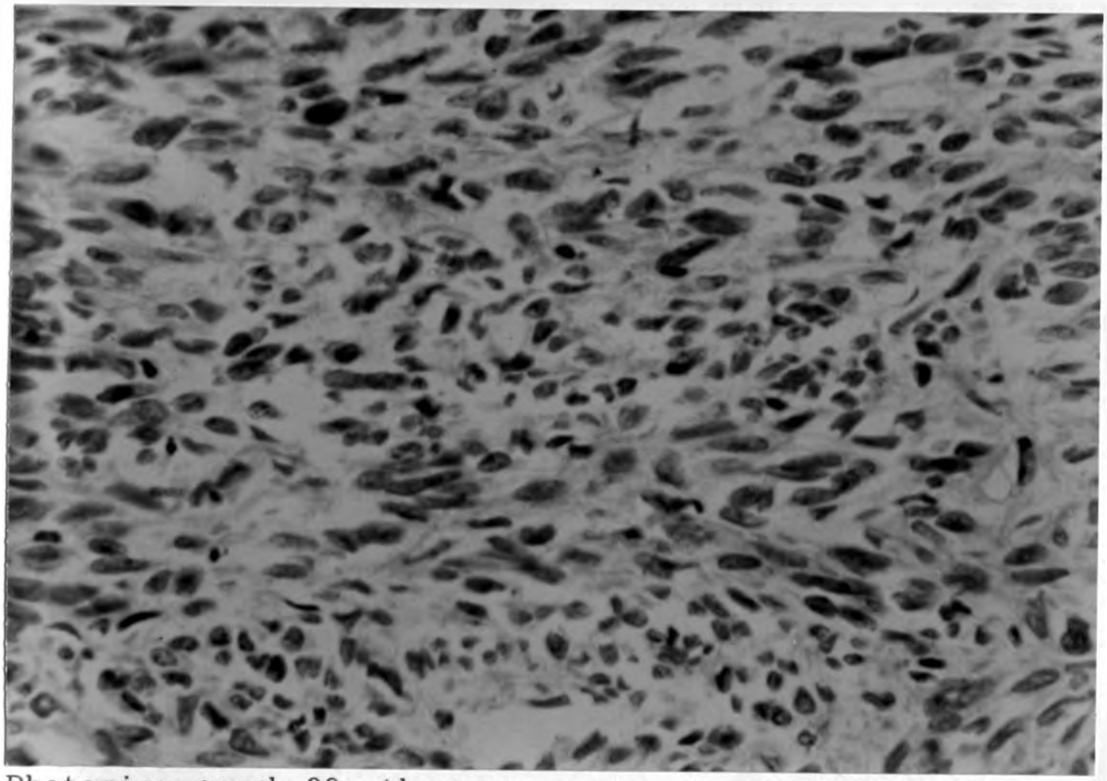
Photomicrogragh 19: granulosa cell tumour
Trabeculae of granulosa cells are separated by thecofibromatous stroma (trabecular pattern) x100.



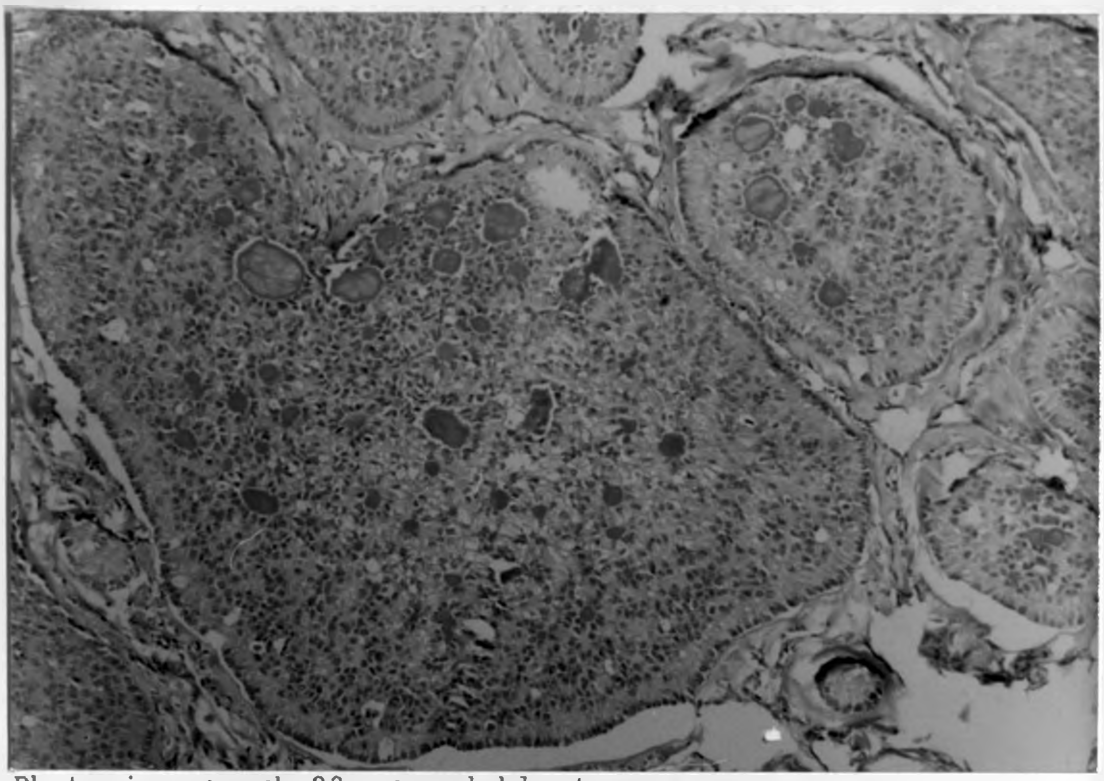
Photomicrogragh 20: granulosa cell tumour
Solid pattern - large round and polyhedral nuclei with varying amount of cytoplasm x400.



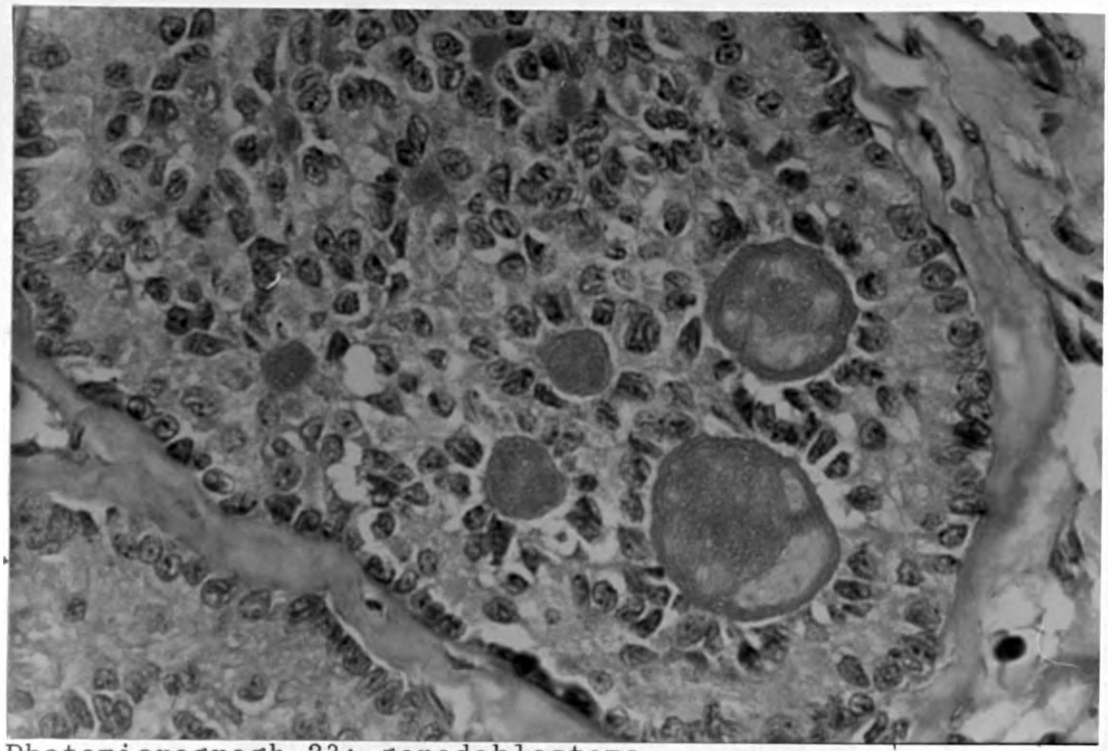
Photomicrogragh 21: fibroma.
Bundles of uniform spindle cells x400.



Photomicrogragh 22: thecoma.
Ovall and spindle cells.



Photomicrograph 23: gonadoblastoma.
Nests of germ cells containing round pink staining hyaline bodies x100.



Photomicrograph 23: gonadoblastoma.
Higher magnification of the nests of cells with hyaline bodies. The germ cells are similar to those of a dysgerminoma with round nuclei and prominent nucleoli x400.

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APPENDIX - 1

Haematoxylin and Eosin method.

1. Bring section to water.
2. Stain in Mayer's haematoxylin.
3. Wash in water.
4. Differentiate in 1% acid alcohol.
5. Wash in water.
6. Blue in Scotts' tap water for 30 seconds.
7. Rinse in water.
8. Counterstain in 1% eosin for 5 minutes.
9. Rinse in water.
10. Dehydrate in alcohol.
11. Clear in xylene.
12. mount in DPX.

APPENDIX 2

BENIGN LESIONS - NORMAL OVARY OR NORMAL VARIANCES.

-Cystic corpus luteum - normal ovary, remnants of cystic follicle

-Simple ovarian cyst - normal ovarian tissue

-Fibroma and follicular cyst - normal ovary

-Simple ovarian cyst - normal ovary

-Haemorrhagic ovarian cyst with no definite lining - normal ovary.

-Corpus luteum cyst - graafian follicle

-Haemorrhagic necrosis probably secondary to infarction - cystic follicles.

-Fallopian tube and endometriotic cyst - corpus luteum.

-Follicular cyst - corpus luteum.

-Follicular cyst - corpus luteum.

-Polycystic ovarian disease - normal ovary.

-Infarcted haemorrhagic ovary - corpus luteum.

-Fibroma - normal ovary.

-Granulosa theca cell tumour - Normal ovary granulosa cell like proliferation.

-Polycystic ovary - normal ovarian tissue with several cystic follicles

-Benign teratoma - corpus luteum.

-Polycystic ovary - numerous small cystic follicles.

-Simple cyst of ovary - normal ovary.

-Serous cystadenoma - normal ovary with regressing c/luteum

-Ovary and serous cyst - cystic corpus luteum.

-Serous cyst with tuboovarian adhesions - normal ovary with normal surface epithelium.

-Simple cystic teratoma - normal ovary.

-Follicular cyst with haemorrhage - cystic corpus luteum.

-Simple serous cyst - corpus luteum.

-Ovary containing a follicular cyst - normal ovary.

-Follicular cyst with haemorrhage - corpus luteum.

-Corpus luteum cyst - cystic follicle.

-Follicular cysts - corpus luteum.

BENIGN TUMOUR - BENIGN MAINLY TUMOUR

-Dermoid cyst - simple cyst.

-Serous cystadenoma - mucinous cystadenoma.

-Inclusion cysts - serous adenofibroma.

-Dilated follicular cyst and endometriotic cysts - polycystic ovary.

-Sex cord tumour with annular tubules - gonadoblastoma.

-Intermediate differentiated sertoli leydig cell tumour - hilus cell tumour.

-Simple cyst of ovary - serous cystadenoma.

-Mucinous cyst benign - simple cyst .

-Benign juvenile granulosa cell tumour - Leydig cell tumour.

-Serous cystadenoma - simple cyst .

-Benign serous papillary cystadenoma - serous cystadenofibroma.

-Follicular cysts - corpus luteum.

MALIGNANT TUMOURS - MALIGNANT TUMOURS

-Papillary adenocarcinoma with some clear cell areas - endodermal sinus tumour.

-Burkitts lymphoma - Lymphoma not classified due to poor technical quality

-Well differentiated serous cystadenocarcinoma metastasized - anaplastic carcinoma.

-Endometrioid adenocarcinoma - papillary serous cystadenocarcinoma.

-Serous cystadenocarcinoma - dysgerminoma.

-Serous cystadenocarcinoma - dysgerminoma.

-Papillary cystadenocarcinoma mucous producing - serous cystadenocarcinoma.

-Infiltrating large cell anaplastic carcinoma consistent with a primary ductal carcinoma from the breast - poorly differentiated carcinoma with many mitosis some cell show intracytoplasmic mucin not suggestive of ductal carcinoma of breast.

MALIGNANT TUMOURS - BORDERLINE TUMOURS

-Serous cystadenocarcinoma - Serous cystadenoma of borderline malignancy.

-Serous papillary cystadenocarcinoma - papillary serous cystadenoma of borderline malignancy.

MALIGNANT TUMOURS - BENIGN TUMOURS

-Serous cystadenocarcinoma - papillary serous cystadenoma.

-Papillary cystadenocarcinoma - serous adenofibroma.

-Malignant papillary cystoma - Serous cystadenoma.

-Bilateral serous carcinoma of borderline type - papillary serous cystadenoma.

-Serous cystadenocarcinoma - serous cystadenofibroma.

-Mucinous cystadenocarcinoma - serous cystadenoma.

BENIGN - MALIGNANT

-Haemorrhagic congested infarcted ovarian torsion - endometrioid carcinoma

MALIGNANT TUMOURS - NORMAL OVARY

-Sclerosing stromal tumour - normal ovary.

-Necrotic cystadenocarcinoma - corpus luteum.