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Kayapınar 9 No'lu Aile Sağlığı Merkezi, Diyarbakır
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## Folic Acid Use and Knowledge about among Women in Reproductive Age

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[1]Mustafa Kemal Üniversitesi Aile Hekimliği Anabilim Dalı
[2]Mustafa Kemal Üniversitesi Kadın Hastalıkları ve Doğum Anabilim Dalı
[3]Antakya Devlet Hastanesi, Üroloji Kliniği



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[1]Department of Family Medicine, Ahmadu Bello University Teaching Hospital, Zaria.
[2]Department of Family Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria
[3]Department of Family Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria
[4]Department of Behavioural Sciences, University of Ilorin Teaching Hospital, Ilorin, Kwara State Nigeria
[5]Department of Family Medicine, Kwara State Specialist Hospital, Sobi, Ilorin, Kwara State, Nigeria
[6]Department of Family Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria



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Hafik İlçe Devlet Hastanesi, Aile Hekimliği Birimi
İzmir Katip Çelebi Üniversitesi Atatürk Eğitim ve Araştırma Hastanesi, Aile Hekimliği Kliniği
Kayapınar 9 No'lu Aile Sağlığı Merkezi, Diyarbakır
Ümraniye 4 No'lu Aile Sağlığı Merkezi, İstanbul

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2004 yılında Hollanda'da Junior Doctors Project adı altında düzenlenen ön-konferans sonrası oluşan Vasco da Gama Hareketi'nin (VdGM) amaçlarından bazıları; ulusal organizasyonların genç doktorların desteklemesini sağlamak, bölgesel ve ülke çapında araştırmalar yapılmasını sağlamak, asistan eğitiminde kaliteyi arttırmak, ülkeler arası değişim programları düzenlemek ve kolaylaştırmak, Avrupalı asistan ve yeni uzmanların sorunlarını, endişe ve gereksinimlerini tartışabilecekleri ve çözümler üretebilecekleri bir iletişim ağı kurmaktır. Aktif eğitim, aile hekimliğinin geliştirilmesi ve kalite standardının sağlanması için Avrupa Aile Hekimleri Birliği (WONCA Europe) kapsamında ön-konferanslar düzenlemektedir. VdGM aile hekimliğini ulusal ve uluslararası platformlarda temsil eden en önemli organizasyonlardan birisidir.[1-4] Bu organizasyon birçok Avrupa ülkesinde ve Türkiye'de aile hekimlerinin ilgi, katılım ve aktif rol almaları ile giderek gücü artan ve sesi duyulan bir hareket olmaktadır. Bu bağlamda; VdGM'nin düzenli olarak gerçekleştirmiş olduğu ön-konferans çerçevesinde Prag'da bulunduğumuz süre boyunca edindiğimiz bilgileri ve özellikle birinci basamak sağlık hizmetlerine yönelik gözlemlerimizi ve ön-konferansa katılım koşullarını bütün aile hekimliği camiasına aktarmak isteriz.

Her yıl bir Avrupa ülkesinde düzenlenmekte olan ve 2015 yılında Türkiye'de düzenlenecek olan Avrupa Aile Hekimleri Birliği Konferansının duyurusu aylar öncesinden hekimlere aile hekimliği internet sitelerinden duyurulmaktadır.

**Corresponding author:**
Arzu Ayraler
Hafik İlçe Devlet Hastanesi, Aile Hekimliği Birimi
E-mail: ayraler7@hotmail.com
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Her ülkeden konferans ve ön-konferans için iki katılımcı belirlenmektedir. Bunlardan birisi VdGM ülke temsilcisi, diğeri ise o yıl için seçilen yeni katılımcıdır. Yeni katılımcı olabilmek için, istekli genç aile hekimlerinin konferansın duyurulmasının ardından Türkiye Aile Hekimleri Uzmanlık Derneği'ne (TAHUD) iletilmek üzere VdGM ülke temsilcisine amaç ve beklentilerini özetleyen motivasyon yazısı ile özgeçmişini özetleyen evrakları göndermeleri gerekmektedir. Başvurular için aranan kriterler; iyi düzeyde İngilizce bilmek, TAHUD, VdGM ve Familya (Türkiye Aile Hekimleri Uzmanlık Derneği İstanbul Şubesi TAHUD asistan iletişim grubu olan familya aile hekimliği uzmanlık öğrencilerinin iletişimi, eğitimi, eğlencesi ve vesairesi ile ilgilenmektedir.) üyesi olmaktır. Başvurular TAHUD Kurulu tarafından değerlendirilir ve yeni katılımcı seçilerek ismi internet sitesinden duyurulur. Avrupa Aile Hekimleri Birliği Konferansı ve VdGM ön-konferansı hazırlık sürecinde de katılımcıların önceden kongre organizasyon komitesine bildirilmesinden sonra, konaklama ve vize işlemleri tamamlanır.

Konferans ve ön-konferans duyurusunu gördükten sonra dönemin Türkiye VdGM ülke temsilcisine özgeçmişimizi ve neden katılmak istediğimizle ilgili motivasyon mektubumuzu yolladık. TAHUD'a iletilen evraklarımızın değerlendirilmesi sonrasında 2013 yılı için yeni katılımcı olarak seçildiğimiz bildirildi ve kongreye kaydımız yapıldı. Haziran'da başlayan ön konferans için Çek Cumhuriyetinin başkenti olan ve bizi tarihi dokusu, mimarisi, müziği ile çok güzel insanların karşıladığı "Prag" şehrine gittik. Ülke hakkında bilgi vermek gerekirse; Çek Cumhuriyeti yüzölçümü 78.864 km2 olan, nüfusu 10.5 milyon kişi ile orta Avrupa'da yer alan, tarım ve sanayi kaynaklarını dengeli kullanan bir Avrupa Birliği ülkesidir. Başkent Prag, tarihi merkezi Birleşmiş Milletler Eğitim, Bilim ve Kültür Örgütü

UNESCO'nun dünya kültür ve doğa mirası listesindedir. Çek Cumhuriyeti'nde 1 Ocak 1993 tarihinde zorunlu sağlık sigortasına geçilmiştir. Bireylerin, işverenlerin ve devletin katkılarıyla finanse edilmektedir. 1990'lardaki geçiş döneminde finansman desteği devlet ve belediyelerin bütçesinden, kişisel ödemeler, bağışlar ve sağlık sigortası fonlarından sağlanmıştır. Sağlık hizmetleri bölgesel bazda sunulmaktadır. Bölge sağlık bürosu o bölgede yaşayan vatandaşların kendi seçtikleri birinci basamak hekimine ulaşıp sağlık hizmeti alabilmesi için gerekli şartları oluşturmakla yükümlü bürodur. İstenirse anlaşma yapılmış olan hekimler vatandaşlarca altı ay sonunda değiştirilebilir. Muayene için bir miktar katılım payı ödenmesi gerekmektedir. Doktorların birinci basamak sağlık hizmeti verme lisansları Çek Tıp Odası tarafından kontrol edilmekte ve bölge sağlık bürolarınca onay verilmektedir. Doktorlar daha sonra sigorta fonlarıyla anlaşma imzalamaktadır. Çek aile hekimleri Türkiye'de olduğu gibi poliklinik veya temel sağlık hizmetlerini erişkin veya çocuk hasta ayırımı yapmadan tek başına veya birkaç doktor bir araya gelerek vermektedirler. Sağlık hizmeti verilen merkezlerin mülkiyeti belediyelerdedir ve bir müdürlüğe bağlıdır. Bu merkezler özel hekimlerce kullanılacaksa kira ödemesi istenmektedir. İkinci basamağa gitmek için aile hekimi sevki gerekmemektedir.

Ön-konferansın ilk günü konferans katılımcılarına bir brifing verildikten sonra ön-konferans için gelen ülke temsilcileri çalışma gruplarına ayrıldı. 2013 Avrupa Aile Hekimleri Birliği ve VdGM ön-konferansı nedeniyle Prag'da VdGM ekibi ile birlikte 9-11 kişiden oluşan dokuz ayrı çalışma grubunda "aile hekimliğinin seçilme nedenleri, asistanların eğitim süreleri ve farklılıkları, ülkelerin ödeme sistemleri, resmi kayıtlı hasta sayıları, diğer branşlara sevk için aile hekimliğine başvuru yapıp yapılmadığı" gibi konular tartışıldı. Farklı ülkelerdeki aile hekimlerinin sorunları, bireysel ve birlikte yapılabilecek çalışmalar, ortak çözümler ve iyileştirmeye yönelik öneriler üzerinde grup çalışmaları yapıldı. Daha sonra bu çalışma gruplarına Charles Üniversitesi Aile Hekimliğinde klinik yaklaşım (Hasta ile görüşme becerileri, ilk yardım girişimleri, entübasyon, kardiyopulmoner resusitasyon v.b.) ile ilgili uygulamalar gösterildi. İkinci günün sonunda grupların çalışmalarını özetleyen sunumları için ortak bir salonda toplanıldı. Sunumlarda genel olarak değişik ülkelerde aile hekimliği uygulamalarının nasıl olduğundan, uzun süredir bu uygulamayı yapan ülkelerin aile hekimliği deneyimlerinden, yeni aile hekimliği uygulamasına geçen ülkelerin sorunlarından bahsedildi ve aile hekimliğinin diğer alanlar içinde öneminin giderek artıyor olması ve koruyucu hekimliğin önemi vurgulandı. Aile hekimlerinin birbirleri ile daha iyi iletişim kurmaları gerektiği ve bu birliği güçlendirmenin yolları üzerine genel tartışmalar yapıldı ve ortak fikirlere varılmaya çalışıldı. Ön-konferans WONCA başkanının konuşması ile bitirildi.

Aile hekimliği uzmanlığına yeni adım attığımız dönemde, bu alanda dünyadaki gelişmelerden haberdar olmamızı sağlayan, bu kongreye katılarak edindiğimiz deneyim ile aile hekimliği görüşümüzün genişlemesine, farkındalığımızın artmasına, birçok ülkeden yeni arkadaşlar ile tanışma fırsatı yakalamamıza, değişik kültürler ile iş birliği ve koordinasyon mutluluğunu yaşamamıza neden olan, aile hekimi olmanın önemi ve değerini bir kez daha anladığımız bu kongreye katılımımızı sağlayan, TAHUD Merkez Yönetim Kurulu üyelerine ve VdGM Türkiye ekibine çok teşekkür etmek isteriz. VdGM Türkiye çalışmalarının hızlanarak devam etmesinin ülkemizde aile hekimliği bakış açısını geliştireceğini düşünmekteyiz.

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# Folic Acid Use and Knowledge about among Women in Reproductive Age

Ayşe Neslin Akkoca[1], Raziye Keskin Kurt[2], Oya Soylu Karapınar[2], Serkan Özler[3], Cahit Özer[1]

[1]Mustafa Kemal Üniversitesi Aile Hekimliği Anabilim Dalı
[2]Mustafa Kemal Üniversitesi Kadın Hastalıkları ve Doğum Anabilim Dalı
[3]Antakya Devlet Hastanesi, Üroloji Kliniği

**ÖZET**

**Üreme Çağındaki Kadınların Folik Asit Kullanma Durumu ve Bilgi Düzeyi**

Amaç: Üreme çağındaki kadınlar ve gebelerin folik asit kullanımının ve bunlara etki eden faktörlerin araştırılması amaçlandı. Gereç ve Yöntem: Kasım 2012- Ocak 2013 tarihleri arasında Mustafa Kemal Üniversitesi Hastanesi Kadın Hastalıkları ve Doğum ve Aile hekimliği polikliniklerine her hangi bir sebeple başvuran üreme çağındaki (18-49 yaş) deneklere sosyodemografik bilgiler ve folik asit kullanımı ile ilgili soruları içeren bir anket uygulandı. Katılımcıların önceki gebeliklerinde yada gebeyse şimdiki gebeliğindeki folik asit kullanma öyküsü ve bilgi düzeyi sorgulandı. Bulgular: Çalışmaya katılmayı kabul ederek anket dolduran 665 kadın'dan: 341(%51.4) kadın çocuk sahibi olmayı düşündüğünde (kullandığı korunma yöntemini bırakmadan önce) doktora gitmediğini,353 (%53.2) kadın gebe kalmadan önce folik asit kullanmadığını,156 (%23.5) kadın kimse önermediği için kullanmadığını,179 (%26.9) kadın ilaç hakkında bilgisi olmadığı için kullanmadığını ,311(%46.9) kadın folik asidi hiç duymadığını, 115( %17.4) kadın folik asidin yararlı olup olmadığını bilmediğini, 520 (%78.2) kadın yararlı olduğunu düşündüğünü, 254 (%38.3) kadın bebekte oluşacak sakatlıkları önlediğini bildiğini, 323 (%48.6) kadın ne işe yaradığını bilmediğini, 86 (%13) kadın anneye faydalı olduğunu bildiğini, 323 (%48.6) kadın ne zaman alınacağı konusunda fikrinin olmadığını, 227 (%34.2) kadın aile hekimi tavsiyesiyle kullandığını, 70 (%10.6) kadın, kadın hastalıkları ve doğum uzmanı tavsiyesiyle kullandığını, 54(%8.2) kadın ebe ve hemşire tavsiyesiyle kullandığını, 395 (%59.5) kadın gebeliği boyunca her gün çeşitli ilaçlar kullandığını, 196 ( %29.5) kadın hiç ilaç almadığını ifade etmişlerdir. Sonuç: Üreme çağındaki kadınların önemli bir kısmının folik asit kullanmadığı, kullanım amaçlarını da bilmedikleri görülmüştür. Üreme çağındaki kadınların folik asitle ilgili daha ayrıntılı bilgilendirilmeleri gerektiğini düşündürmektedir.

**Anahtar Kelimeler:** Folik asit, Antenal bakım, Prekonsepsiyonel bakım, Nutrisyonel destek, Üreme çağı, Nöral tüp defekti

**ABSTRACT**

**Folic Acid Use and Knowledge about among Women in Reproductive Age**

Aim: The aim of the study is to evaluate the use of folic acid and associated factors among pregnant women or women of reproductive age.Materials and Methods: A questionnaire consisting of questions on folic acid use in prior or current pregnancies and sociodemographic data was applied to subjects of reproductive age (18-49 years of age) who admitted to Obstetrics and Gynecology and Family Medicine outpatients between November and January 2013.Results: Of the 665 subjects who accepted to participate, 341 (51.4%) women reported not visiting their doctor when considering pregnancy (before discontinuing birth control), 353 (53.2%) women reported not using folic acid prior to pregnancy, 156 (23.5%) women reported not using as no one recommended, 179 (26.9%) women reported not using as they were not informed about the drug, 311 (46.9%) women reported never having heard of folic acid, 115 (17.4%)women reported not knowing whether folic acid is beneficial, 520 (78.2%) women reported considering it beneficial, 254(38.3%) reported knowing that it prevents disabilities of the infant, 323(48.6%)women reported not knowing what it is good for, 86(13%)women reported knowing that it's beneficial for the mother, 323(48.6%) women reported not knowing when to use it, 227 (34.2%) women reported using upon recommendation by the general practitioner, 70 (10.6%) women reported using upon recommendation by the obstetrician, 54 (8.2%) women reported using recommendation by the midwife-nurse,395 ( 59.5%) women reported using various medicinal products during pregnancy, 196 (29.5%) women reported using no medicinal products. Conclusion: It was found that majority of the women of reproductive age didn't use folic acid and lack adequate levels of information about. These results suggest that women of reproductive age should be informed about the folic acid in further detail.

**Key Words:** Folic acid, Antenatal care, Preconceptional care, Nutritional support, Reproductive age, Neural tube defects

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## Introduction

The neural tube develops during the first four weeks of pregnancy, and forms the brain and spinal cord. In some conditions where the exact reasons remain unknown while both genetic and environmental factors are thought to be involved, neural tube fails to complete its development and leads to serious congenital anomalies such as anencephaly, encephalocele, meningocele, myelocele, spina bifida which are collectively termed as neural tube defects (NTD). Infants with anencephaly die immediately after birth while other NTD lead to serious, life-long disabilities. NTD are one of the most frequently encountered congenital anomalies.[1] A study in Turkey has found an incidence of 0.3%. The rate has been reported as 0.1% in Europe, and 0.2% in USA. The risk of having a second child with NTD for parents with a previous child with NTD is reported as 2-3%. Furthermore, it is believed that unknown numbers of pregnancies result is spontaneous abortion due to NTD. All of these defects occur during the first 28 days of pregnancy when the mother candidate is most likely to be unaware of her pregnancy.[2,3]

Folic acid is a water soluble vitamin B which is abundantly found in dark green-leaved vegetables and initially described in 1931 by Lucy Wills as a nutrient that prevents anemia in pregnant women. Wills showed that anemia could be cured with brewer's yeast.[4] Folate was found in brewer's yeast towards the end of 1930s; and was initially isolated in 1941 by Mitchell and colleagues in spinach leaves.[5] Folate is essential for cell proliferation and cell vitality. It is particularly important during pregnancy and infantile period when there is rapid cell division and growth. The body uses folate as the substrate of single carbon transfer reactions, and it is also involved in the synthesis of thymidylate and purine bases as well as histidine metabolism.

**Corresponding author:**
Ayşe Neslin Akkoca
Mustafa Kemal Üniversitesi Aile Hekimliği Anabilim Dalı, Antakya, Türkiye
E-mail: ayseneslinoguzhan@hotmail.com
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Normally, an adult stores 5-20 mg folic acid in various depots within the body. Half of this amount is stored in the liver.[6] With a low-folate diet such as 5 µg daily, the earliest signs of folic acid deficiency occur at week 16 in the form of morphological changes in erythrocytes.[7] Folic acid (folate) is a type vitamin B (B9), and is profoundly found in green-leaved vegetables: Spinach, beans, broccoli, peanuts, orange juice, cereals, walnut, almond, nuts, pistachio, liver, kidney and brewer's yeast.[4] Folic acid metabolism is closely associated with vitamin B12 metabolism, and plays an important role in cell growth and development (particularly central nervous system development) and tissue formation. Recent studies show that 70% of the NTD can be prevented by using 0.4 mg folic acid per day starting from pre-conception of the mother and throughout the first 3 months of pregnancy.[2,3] The aim of the present study is to investigate the knowledge level and use of folic acid and multi-vitamin preparations containing folic acid during the pre-conceptional period and early pregnancy among women.

## Materials and Methods

The study included a total of 665 women who gave birth at the Obstetrics and Family Health Clinic of Mustafa Kemal University Training and Research Hospital during November and January 2013. The knowledge level of the participants was investigated by asking the women to complete a questionnaire consisting of specific questions on folic acid. The questionnaire addressed sociodemographic characteristics, whether the women visited a doctor before discontinuing contraception when planning pregnancy, folic acid use before pregnancy, reasons of not using folic acid, awareness about folic acid, knowledge on benefits of folic acid, its effect, and when to use, information on who recommends folic acid use and whether the woman uses daily medicinal products.

## Results

*Sociodemographic data:* The mean age of study population was 26.4±4.6. While %70(n=465) of women were primiparous, % 30(n= 200) of women

were multiparous. Women were low, medium and high socioeconomic level, %10(n= 66), %70 (n=465) and %20(n=134) respectively. Education levels of women were illiterate (%5, n=35), primary school (%60, n=399), high school (%20, n=133) and university (%15, n=98).

*Folic acid usage status of women before pregnancy:* %51,4(n=342) of women stated that they quitted contraception without applying their physician when they wanted to get pregnant. %53,2(n=354) of women did not use folic acid before getting pregnant.

**Table 1.** Reasons for not using folic acid

| | n (%) |
|---|---|
| Not recommended | 156 (23.50%) |
| No information | 179 (26.90%) |
| Never heard of it | 311 (46.90%) |
| No reason | 19 (2.70%) |

**Table 2.** Information level for folic acid

| Folic acid beneficial | Beneficial n (%) | Not beneficial n (%) | No information n (%) |
|---|---|---|---|
| | 520 (78.20%) | 30 (4.40%) | 115 (17.40%) |
| For whom folic acid is beneficial | Mother (%) | Infant (%) | No Information (%) |
| | 67 (13%) | 200 (38.30%) | 253 (48.60%) |

While %48,6'sı (n=323) of women did not have opinion about when to take folic acid,%51,4 of women though that folic acid were taken during pregnancy not in prenatal period.

*Physician advice for folic acid intake:* Advice for folic acid intake to women were given by family physician(%34,2, n=23), obstetrician(%10,6 , n=7) and midwife or nurses(%8,2, n=6).

*Folic acid usage during pregnancy:* While %59,5(n=396) of women took folic acid every day,%29,5(n=197) of women did not take the drug during pregnancy.

**Discussion**

Folic acid (folate) aids the synthesis of DNA (Deoxyribonucleic acid) and RNA (Ribonucleic acid) which control cell proliferation. In a randomized, controlled, multi-center follow-up study including 1200 women with NTD history, using 0.4 mg folic acid per day starting from at least one month before conception and continuing through the first three months of pregnancy was shown to decrease NTD risk by 3.6-fold (Folic Plus Film Tablets, Assos, expectant mothers should take 3 tablets daily). A Chinese cohort study in approximately 250,000 women showed a decreased risk of giving birth to an infant with NTD with the use of 0.4 mg folic acid (risk decreased by 85% in regions with high NTD prevalence, by 40% in regions with low NTD prevalence).[8,9]

Several studies indicate that all women of reproductive age should be encouraged to take 0.4 mg folic acid per day. This conclusion has been made based on the decreased NTD incidence in several countries where regular folic acid supplementation has been added to the diet. The country with the highest NTD incidence has been reported to be Ireland, where the prevalence has decreased from 0.27% in 1980s to 0.15% in 1994. In USA, folic acid supplementation in cereal products has been initiated in 1998 with an attempt to ensure the intake of 0.4 mg folic acid in all women of reproductive age.[9]

The various studies on neural tube defects in Turkey indicate a frequency of 3-5.8 in one thousand live births. This rate shows the increased frequency of NTD in our country. Currently, the effectiveness of folic acid use during the peri-conceptional period in decreasing the risk of pregnancies with neural tube defects is of indisputable certainty. Several observational studies have demonstrated that taking 400 µg folic acid per day decrease NTD incidence by 60%. Owing to the preventive role of folic acid against NTD, a program of obligatory fortification with folic acid has been initiated in over 50 countries including the United States of America and Canada as of 1998. The fortification provided by adding folic acid to flour and cereals have led to significantly decreased NTD rates in these countries.[10]

"Investigation of congenital malformation prevelance, distribution and anthropometric evaluation of newborn in Turkey-1993" stated NTD prevelance frequent as 0.3% in our country.[10] Folic acid usage (5 mg/day) starting 2 months before pregnancy until first 2 months of pregnancy reduced NTD risk in women with previous NTD history. It was seen that women having not taking folic acid had NTD risk of % 4.04. Although there is an obvious relation between NTD and folic acid usage, knowledge of women in reproductive age is inadequate.[11,12]

Only 22% of women had knowledge about folic acid in a questionnaire study including 818 women. Also only 13% of women knew NTD and folic acid relation. Women with higher education level had more information about folic acid12. İn our study folic acid knowledge level of women was higher than previous study. % 46,8 of study population used folic acid before getting pregnant and %38.3 of women knew folic acid effect to prevent congenital anomaly.

In conclusion, considering the relatively high incidence of NTD in our country, ensuring intake of adequate folic acid among women of reproductive age may provide important advance on the subject. The present study has shown the inadequate level of information on folic acid use and its preventive effects among women of reproductive age. Due to the folic acid deficiency and high incidence of NTD observed in our country, the necessary basic health policies should be developed in order to achieve primary protection by taking into account the socioeconomic levels, educational level of women, knowledge level regarding folic acid and neural tube defects, and rates of unplanned pregnancies. In this context, first-line general practitioners play a major role in informing and referring women to family health professionals and second-line obstetricians. Furthermore, written and visual media may also serve as a tool for informative purposes.

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# Quality of Life of Patients with Tuberculosis in a Nigerian Teaching Hospital

Abdullateef Gbenga Sule, Loius O Odeigah, Kolawole Moradeyo Alabi, Baba A Issa, Razak Olatunji Shittu, Anthony Itopa Joseph, Olagunju Fatai Abiola, Butawa Nuhu Natie.

[1]Department of Family Medicine, Ahmadu Bello University Teaching Hospital, Zaria.
[2]Department of Family Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria
[3]Department of Family Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria
[4]Department of Behavioural Sciences, University of Ilorin Teaching Hospital, Ilorin, Kwara State Nigeria
[5]Department of Family Medicine, Kwara State Specialist Hospital, Sobi, Ilorin, Kwara State, Nigeria
[6]Department of Family Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria

**ABSTRACT**

**Quality of Life of Patients with Tuberculosis in a Nigerian Teaching Hospital**

Tuberculosis (TB) remains a major public health concern despite the decline in its mortality rate.There is a dearth of study on HRQOL among patients with tuberculosis in Nigeria. This study aimed to evaluate the HRQOL in pulmonary tuberculosis patients at a Nigerian university teaching hospital. A cross sectional study was conducted from December 2010 to April 2011 in the Tuberculosis (TB) clinic of the Department of Family Medicine University of Ilorin Teaching Hospital Ilorin, Kwara state, Nigeria. Data on HRQOL were collected from 154 PTB patients using the World Health Organization Quality of life Instrument Brief version (WHOQOL-BREF), which covers physical, psychological, social relationships and environment health domains. The data were interviewer-administered by the researcher and analysed using SSPS 16.0 statistical software. Most of the patients had fair grades in all the health domains assessed. Environment (11.10 ± 1.82).and psychological (11.44 ± 2.63) health domains were the worst affected in this study. There were associations between HRQOL and the educational status, age, gender and occupational class of the patients. The patients’ weight status and sputum smear results were significantly related to their HRQOL. This study suggests that HRQOL of pulmonary tuberculosis patients was found to be fairly impaired in all the health domains despite at least two months of treatment with anti-tuberculosis drugs. The environment and psychological health of the patients were the most affected domains in this study.

**Key Words:** Health, Quality of life, Pulmonary, Tuberculosis, Nigeria

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## Introduction

The World Health Organisation (WHO) defined quality of life as "individuals' perceptions of their positions in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns."[1]

A patient with tuberculosis faces several physiological, psychological, financial and social problems. These problems have a great impact on the well being of the patient and impair the quality of life of the patient suffering from tuberculosis.

**Corresponding author:**
Abdullateef Gbenga Sule
Department of Family Medicine, Ahmadu Bello University Teaching Hospital, Zaria.
E-mail: gbensule@yahoo.com
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Quality of life indices, which focus on patients' own perception of disease, provide additional information that cannot be obtained from conventional clinical and functional measurements.[2]

Although, tuberculosis is no longer among the 10 leading causes of death, it is still among the top 15, killing 1.3 million people in 2012 and second only to human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) among infectious diseases.[3] The disease is concentrated in developing world, and 80% of all cases occur in the 22 highest-burden countries, Nigeria inclusive.[4] Sputum negativity and weight gain are the only positive prognostic indicators usually considered in the disease management and not in other dimensions of health.[3]

There are numerous aspects of active TB disease that may lead to a reduction in HRQOL. Standard anti-TB treatment requires prolonged therapy (at least 6-8 months) with multiple potentially toxic drugs that can lead to adverse reactions in a significant number of patients.[5] There is considerable social stigma associated with active TB, leaving the individuals feeling neglected and isolated from their friends and families[6,7,8] because they are perceived as sources of infection leading to a long-term impairment in patients' psychosocial well-being.[9,10] Diagnosis of TB can also lead to depression and anxiety.[11] The patients also do demonstrate lack of knowledge regarding the disease process and its treatment, which may contribute to feelings of helplessness and anxiety.[12,13,14]

There are many studies on health-related quality of life among tuberculosis patients around the world. One of these studies reported significantly lower mean scores than the controls for overall QOL and its domains.[15] The most affected domains were physical and psychological while social domain had the highest scores in a study using WHOQOL-BREF instrument. While some studies reported to have poorer HRQOL in older people than younger ones,[16,17] other study[18] did not report a significant associations between gender, age and HRQOL in TB patients. On the other hand better HRQOL was correlated with higher income, higher education, better housing conditions, better social security and closer relationships with family members and friends.[18]

The impact of chronic health conditions like TB on the QOL of patients in sub-Saharan Africa with scarce resources to ameliorate disability may be quite different from that of the other parts of world where the studies were conducted. This study, therefore, provides an opportunity for transcultural comparison of HRQOL in TB using a widely accepted instrument, WHOQOL-BREF in a resource-poor developing country, Nigeria.

## Materials and methods

A cross sectional study was carried out in the TB clinic of the Department of Family Medicine, University of Ilorin Teaching Hospital Ilorin. Ilorin is the capital of Kwara state, North Central Nigeria. The Clinic serves as a referral centre for primary and comprehensive health care centres within and around Kwara state. Enrolment into the Clinic is based on positive sputum smear results and/or radiographic features suggestive of TB, in patients who present with clinical signs and symptoms suggestive of tuberculosis. The hospital record shows that two hundred and fifty seven (257) patients received treatment in the clinic in the previous year.

The sample size was determined by using Fisher's statistical formula for estimating minimum sample size in health studies.[19] An approximated sample size of 154 was used for the study.

One hundred and fifty four patients that satisfied the inclusion criteria were selected using systematic random sampling technique.

All adult PTB patients, attending the TB clinic of the Department of Family Medicine at University of Ilorin Teaching Hospital, who have had at least two months of anti-tuberculosis drugs and gave their consent to participate in the study, were included. Excluded were patients with other chronic medical illnesses e.g. HIV, Hypertension, Diabetes, Chronic Obstructive Pulmonary Diseases (COPD). Also excluded were patients with diagnosed major psychiatric illnesses and patients with extra pulmonary Tuberculosis.

**Instruments of the study**

**Socio-demographic characteristics:** This section included the respondents' age, sex, and religious affiliation, level of education, marital status, occupation and ethnicity. The respondents were grouped into different occupational classes using Oyedeji's socioeconomic classification model25 this is a local instrument for social status stratification based on individuals' occupations and educational achievements. This has been found to be relevant and suitable for this study area.[20]

**WHOQOL-BREF:** Quality of life was evaluated using the World Health Organization Quality of life (WHOQOL-BREF) instrument. The WHOQOL-BREF questionnaire assesses the QOL of patients over the preceding two weeks. This questionnaire has good psychometric properties[1,21] and has been validated and used in previous studies in Nigeria.[21,22] The Yoruba version of this instrument which has been validated and adjudged suitable and relevant for QOL studies in Nigeria[22,23] was also used in this study. In contrast to many other quality of life instruments such as Dhingra and Rajpal (DR-12) and Short-Form 36 (SF-36), WHOQOL-BREF includes a domain on environment. This is considered necessary as environment plays a major role in determining health status, mediating disease pathogenesis and limiting or facilitating access to health care.

Categorization was done depending on whether the respondent's score in each domain was < (less than) the mean – 1 standard deviation (minus 1SD) which was graded 'poor', a score of mean ± 1 SD, 'fair' and a score of > mean + 1 SD, 'good'.

Ethical clearance to undertake the study was obtained from the Ethical Review Committee of

the University of Ilorin Teaching Hospital. And the subjects were adequately informed about the nature of the study before obtaining their consent. The pretesting revealed that interviewer-administration of the questionnaire would be the best option considering the varying educational status of the study population. In such situation the interviewer read out the questionnaire to non-literate respondents.

**Data analysis**

Statistical package for social science [SPSS version 16.0.] and Excel 2003 software were used for the statistical analysis. Cross tabulation, frequency statistics and chi-square test were used to evaluate the relationships between variables. A statistical significant level of less than 0.05 values was set.

**Results**

A total of 154 patients were recruited for the study. Most of the respondents (60.1%) were below the age of 38years and the mean age was 36 ± 13years. Majority of the respondents (61%) were male. Most of the respondents in age group 18-27years, (38.3%) had good grade, 28-37years, (48.9%) had fair grade, 38-47years, (40.7%) had good grade, 48-57years, (43.8%) had both good and fair grades each and above 58years (58.8%) had fair grade. Most males (43.6%), had fair grade while (41.7%) of females had good and fair grades each. The majority of the Yoruba ethnic group (43.1%) had fair grades, Hausa (37.5%) had both fair and poor grades each, Igbo (50.0%) had fair grades while (50.0%) of the minority ethnic groups had good grades. Majority of the respondents in all the age groups, both gender and the different ethnic groups in this study had fair grades except for the minority ethnic groups of which majority (50%) had good grades. None of the associations were statistically significant (p> 0.05) (Table 1).

Most of the respondents who had no formal education (51.6%), primary (42.5%), and secondary (42.1%) had fair grades but tertiary (40.0%) had good grades. The respondents who are single (39.7%) had good grades while married (50.6%), separated (50.0%), and widowed (50.0%) had fair grades and (55.6%) of the divorced had poor grades. Majority of the respondents from religious affiliations, different educational levels, various marital status and the different ethnic groups in this study had fair grades. Most of the respondents in class II (64.3%) and class III (46.4%) had good grades while class IV (58.6%) and class V (54.8%) had fair grades. All the associations except for that between marital status and overall quality of life were not statistically significant (p>0.05) (Table 2).

**Table 1.** Association between overall quality of life and respondents demographic characteristics

| VARIABLES (N=154) | OVERALL QOL GOOD n (%) | FAIR n (%) | POOR n (%) | $X^2$ | P |
|---|---|---|---|---|---|
| **AGE** | | | | **5.393** | **0.715** |
| 18- 27 | 18(38.3) | 17(36.2) | 12(25.5) | | |
| 28 – 37 | 15(31.9) | 23(48.9) | 9(19.2) | | |
| 38 – 47 | 11(40.7) | 9(33.3) | 7(26.0) | | |
| 48 – 57 | 7(43.8) | 7(43.8) | 2(12.4) | | |
| ≥ 58 | 4(23.5) | 10(58.8) | 3(17.7) | | |
| **SEX** | | | | **2.048** | **0.359** |
| Male | 30(31.9) | 41(43.6) | 23(24.5) | | |
| Female | 25(41.7) | 25(41.7) | 10(16.6) | | |
| **ETHNICITY** | | | | **4.151** | **0.656** |
| Hausa | 2(25.0) | 3(37.5) | 3(37.5) | | |
| Yoruba | 45(34.6) | 56(43.1) | 29(22.3) | | |
| Igbo | 1(25.0) | 2(50.0) | 1(25.0) | | |
| Others | 6(50.0) | 5(41.7) | 1(8.3) | | |

The highest score in the QOL rating was (12.54 ± 3.03) in the physical health domain while the lowest score was in the environment domain (11.10 ± 1.82) then followed closely by psychological domain with the score of (11.44 ± 2.63).Table 3. The largest group of respondents with good grade (36.4%) were in the health satisfaction while the largest respondents with poor grade (22.7%) were in social relationships (Table 4)

**Table 2.** Association between overall qualıty of life and respondents social characteristics

| VARIABLES (N=154) | OVERALL QUALITY OF LIFE GOOD n (%) | FAIR n (%) | POOR n (%) | X2 | P |
|---|---|---|---|---|---|
| **MARITAL STATUS** | | | | **19.964** | **0.010** |
| Single | 23(39.7) | 19(32.8) | 16(27.5) | | |
| Married | 29(36.7) | 40(50.6) | 10(12.7) | | |
| Separated | 1(25.0) | 2(50.0) | 1(25.0) | | |
| Divorced | 1(11.1) | 3(33.3) | 5(55.6) | | |
| Widowed | 1(25.0) | 2(50.0) | 1(25.0) | | |
| **OCCUPATION** | | | | **5.439** | **0.489** |
| Class I | -- | -- | -- | | |
| Class II | 8(57.2) | 3(21.4) | 3(21.4) | | |
| Class III | 11(39.3) | 11(39.3) | 6(21.4) | | |
| Class IV | 20(28.6) | 35(50.0) | 15(21.4) | | |
| Class V | 16(38.1) | 17(40.5) | 9(21.4) | | |
| **RELIGION** | | | | **0.309** | **0.857** |
| Christianity | 18(37.5) | 21(43.8) | 9(18.7) | | |
| Islam | 37(34.9) | 45(42.5) | 24(22.6) | | |
| **EDUCATION** | | | | **3.361** | **0.762** |
| No formal education | 7(22.6) | 16(51.6) | 8(25.8) | | |
| Primary | 16(40.0) | 17(42.5) | 7(17.5) | | |
| Secondary | 14(36.8) | 16(42.1) | 8(21.1) | | |
| Tertiary | 18(40.0) | 17(37.8) | 10(22.2) | | |

**Table 3.** Respondents' mean quality of life scores by domains of quality of life

| VARIABLES | MEAN | SD |
|---|---|---|
| DOMAIN 1(Physical) | 12.54 | 3.03 |
| DOMAIN 2 (Psychological) | 11.44 | 2.63 |
| DOMAIN 3 (Social relationships) | 12.27 | 2.53 |
| DOMAIN 4 (Environment) | 11.10 | 1.82 |

**Table 4.** Graded quality of life outcomes of respondents in various domains

| VARIABLES (N=154) | GOOD n (%) | FAIR n (%) | POOR n (%) |
|---|---|---|---|
| Overall QOL | 55(35.7) | 66(42.9) | 33(21.4) |
| Health satisfaction | 56(36.4) | 80(51.9) | 18(11.7) |
| Domain 1 (Physical) | 30(19.5) | 92(59.7) | 32(20.8) |
| Domain 2 (Psychological) | 24(15.6) | 98(63.6) | 32(20.8) |
| Domain 3 (social) | 21(13.6) | 98(63.7) | 35(22.7) |
| Domain 4 (Environment) | 30(19.5) | 95(61.7) | 29(18.8) |

**Table 5.** Classification of accuracy of fit

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Overall quality of life | | Percentage correct |
| | | Poor | Good | |
| Quality of life | Poor | 4 | 18 | 18.2 |
| | Good | 2 | 76 | 97.4 |
| Overall percentage | | | | 80.0 |

**Table 6**. Variables in the equation

| Variables | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Age categorized | .484 | .282 | 2.951 | 1 | .086 | 1.623 |
| Sex | 1.105 | .601 | 3.382 | 1 | .066 | 3.019 |
| Religion | .216 | .623 | .121 | 1 | .728 | 1.242 |
| Education | .227 | .302 | .566 | 1 | .452 | 1.255 |
| Marital Status | -.424 | .316 | 1.794 | 1 | .180 | .655 |
| Social class | -.223 | .362 | .378 | 1 | .539 | .800 |
| Ethnicity | .499 | .511 | .953 | 1 | .329 | 1.648 |
| BMI | .181 | .096 | 3.519 | 1 | .061 | 1.198 |
| Rx Duration | .269 | .330 | .668 | 1 | .414 | 1.309 |
| Constant | -5.946 | 3.552 | 2.802 | 1 | .094 | .003 |

The in binary logistic regression, overall percentage accuracy of the model is high 80.0%, with overall quality of life as the dependent variable and sociodemographic factors as the independent variables shown in Table 5. The odds of having more satisfaction with QOL in pts with PTB is more with the following factors namely, increase age odd ratio Exponential (B) 1.623, particular sex odd ratio Exp(B) 3.019, particular religion odd ratio Exp(B) 1.242, advance education odd ratio Exp(B) 1.255, particular ethnic group odd ratio Exp(B) 1.648 and longer treatment duration odd ratio Exp(B) 1.309 while odd of having satisfaction with QOL is less with married odd ratio Exp(B) 0.655 and higher in occupational class respondents odd ratio Exp(B) 0.800 (Table 6).

Majority of the respondents in all the domains irrespective of the sputum smear results had fair grades. Five (7.8%) of the respondents with positive sputum smears and 25(27.8%) with negative sputum smears in domain 1 had good grades. Nineteen (21.1%) of respondents with negative sputum smears and 5(7.8%) with positive sputum smears had good grades in domain 2. Seventeen (26.6%) of respondents with positive sputum smear and 18(20.0%) with negative sputum smears in domain 3 had poor grades. Similarly in domain 4, 19 (29.7%) with positive

sputum smears and 10(11.1%) with negative sputum smears had poor grades. All the associations between the domains and sputum smear results except for domain 3 were statistically significant ($p< 0.05$) (Table 7).

Majority of the respondents in the various weight statuses in all the domains had fair grades. However, the percentage of respondents with fair grades are in descending order for weight gain, no change in weight and weight loss in all the domains. In the physical health domain, 67(72.8%), 16(17.4%) and 9(9.8%) of those with fair grades had weight gain, no change in weight and weight loss respectively. Similarly, in the psychological health domain, 66(67.3%), 24(24.5%), and 8(8.2%) had weight gain, no change in weight and weight loss respectively. Those with fair grades, 65(66.3%), 24(24.5%), 9(9.2%) in social relationships domain and 59(62.1%), 29(30.5%) 7(7.4%) in environment domain had weight gain, no change in weight and weight loss respectively. All the findings were statistically significant ($p<0.05$) (Table 8).

**Table 7. Association Between Quality of Life Outcomes by Domains and Sputum Smear Results of the Respondents**

| VARIABLES (N=154) | SMEAR POSITIVE | | | SMEAR NEGATIVE | | | $X^2$ | P |
|---|---|---|---|---|---|---|---|---|
| | GOOD n (%) | FAIR n (%) | POOR n (%) | GOOD n (%) | FAIR n (%) | POOR n (%) | | |
| DOMAIN 1 | 5(7.8) | 35(54.7) | 24(37.5) | 25(27.8) | 57(63.3) | 8(8.9) | **22.856** | **0.000** |
| DOMAIN 2 | 5(7.8) | 37(57.8) | 22(34.4) | 19(21.1) | 61(67.8) | 10(11.1) | **14.570** | **0.001** |
| DOMAIN 3 | 6(9.4) | 41(64.1) | 17(26.5) | 15(16.7) | 57(63.3) | 18(20.0) | **2.170** | **0.338** |
| DOMAIN 4 | 7(10.9) | 38(59.4) | 19(29.7) | 23(25.6) | 57(63.3) | 10(11.1) | **11.052** | **0.004** |

**Table 8. Association Between Quality of Life Domains and Weight Status of the Respondents**

| VARIABLES (N=154) | GOOD n (%) | FAIR n (%) | POOR n (%) | $X^2$ | P |
|---|---|---|---|---|---|
| **PHYSICAL HEALTH** | | | | **40.123** | **0.000** |
| Weight gain | 25(25.0) | 67(67.0) | 8(8.0) | | |
| No weight gain | 2(5.0) | 16(40.0) | 22(55.0) | | |
| Weight loss | 3(21.4) | 9(64.3) | 2(14.3) | | |
| **PSYCHOLOGICAL HEALTH** | | | | **18.713** | **0.001** |
| Weight gain | 21(21.0) | 66(66.0) | 13(13.0) | | |
| No weight gain | 4(10.0) | 20(50.0) | 16(40.0) | | |
| Weight loss | 3(21.4) | 8(57.2) | 3(21.4) | | |
| **SOCIAL RELATIONSHIPS** | | | | **16.418** | **0.003** |
| Weight gain | 17(17.0) | 65(65.0) | 18(18.0) | | |
| No weight gain | 4(10.0) | 20(50.0) | 16(40.0) | | |
| Weight loss | 4(28.6) | 9(64.3) | 1(7.1) | | |
| **ENVIRONMENT** | | | | **14.611** | **0.006** |
| Weight gain | 25(25.0) | 59(59.0) | 16(16.0) | | |
| No weight gain | 0(0.0) | 29(72.5) | 11(27.5) | | |
| Weight loss | 5(37.5) | 7(50.0) | 2(14.5) | | |

**Discussion**

Measurement of the HRQOL adds a new dimension to the evaluation of TB programmes. With the development of effective treatment strategies where mortality is likely to be minimal, the focus of TB management has shifted to the reduction of illness-related morbidity. In this context, this study highlights the health-related quality of life and its determinants among tuberculosis patients attending the TB clinic.

In this study, the least affected was the physical health domain which assesses the impact of disease on the level of independence, activities of daily living, pain and discomfort, dependence on medicinal substance, lack of energy, sleep and rest, mobility and capacity to work. The environmental health domain which was the most affected assesses the financial resources, physical safety and security, quality of home environment, quality and accessibility to health and social care, transport and opportunities for leisure activities. On the other hand, the psychological domain which assesses the impact of self-esteem, positive and negative feelings, bodily appearance and spirituality follows closely, then the social relationships domain which assesses social support, personal relationship and sexuality.

This finding was contrary to those of the previous studies[24,25] in which the physical health domain was the most affected by tuberculosis and also had the fastest recovery with treatment while the environment and social relationship were the least affected. The psychological health impairment was ranked second among the most impaired health domain by tuberculosis similar to the finding in this study, and the impairment tends to persist for a longer term than others.[24,25]

The differences observed in this study, may be attributable to the fact that the study area Ilorin, is a city in sub-Saharan Africa with limited resources and different cultural and socio-demographic background compared to the Asian countries where the previous studies were done. Although, anti-TB drugs are free in this Centre, patients and/or their family members have to bear the financial burden of transportation fees, loss of wages, laboratory investigations, nutritional requirements and management of drug-related adverse conditions. Furthermore, the respondents in this study were pulmonary tuberculosis patients who have had treatment for at least two months, which is long enough for improvement in physical signs and symptoms (usually 2-3weeks) for tuberculosis patients on treatment.[4]

The impairment in psychological domain highlights the fact that TB patients in this study like previous studies[24,25] may have reduced self-esteem and negative feelings about their disease conditions and how they are perceived by other members of their families and communities. These patients therefore, need the care and support of their family members, the community as well as Non-governmental Organizations (NGOs) to cope with the psychosocial impacts of the disease and/or its treatment. This would most likely improve adherence to anti-TB and subsequently reduce the increasing burden of drug-resistant tuberculosis.3

In contrast to the general population, health-related quality of life (HRQOL) of TB patients were still found to be fairly impaired in all health domains assessed in this study despite at least two months of anti-TB drugs. This supports the findings in a similar study, which concludes that TB patients have poorer HRQOL compared to the general population after treatment, despite achieving clinical and bacteriological cure.[25]

Many studies reported conflicting evidence about the associations of socio-demographic factors and health-related quality of life among TB patients.[24,26] In this study there were no statistical significance in the associations between socio-demographic factors and health-related quality of life.

The older participants in this study had low percentage of respondents with good grades especially in the physical and environmental health domains. Although this finding is not statistically significant it shows poorer HRQOL among older people in this study. This is understandable, as the decline in health and physical function has been assumed to be inevitable consequence of biological ageing. There were similar findings in previous studies but the physical and psychological domains were the worst affected in those studies.[27]

In this study, associations were observed between overall QOL, health satisfaction and environment health domain with level of education of the respondents. These associations, although not statistically significant were similar to what was reported in a study, which shows that the better the level of education, the better the HRQOL of TB patients.[18] This possibly highlights the fact that people with formal education tend to have better financial status and better understanding of the nature of the disease and its treatment hence have the ability to cope better.

This study revealed that lower occupational classes were associated with poorer HRQOL in most of the health domains. Similar relationship was found in previous studies,[24,25] probably because the higher occupational classes have higher income. People

with better income may have better standards of living and possibly more enlightened, thus better HRQOL. The observation in this study shows that a lower occupational class is not a predictor of a poorer physical health. This probably reflects the fact that most of the respondents belong to the same low socio-economic class and cultural background, hence have similar responses to their physical health related issues. The respondents in occupational class IV were the worst affected in all health domains in this study. This highlights the fact that most of the respondent in class V; the unemployed, housewives and students are dependent on other people of usually higher occupational classes who share their burden of the disease while the respondents in class IV; mostly the labourers, petty traders and messengers usually bear the full weight of the burden of their disease condition alone.

In this study, participants that were previously married; separated, widowed and divorced had significantly poorer overall quality of life compared to the single and married participants. Earlier studies[25] did not consider the relationship between HRQOL and marital status.

In this study, there was a significant association between patient sputum smear results and HRQOL. A similar relationship was observed in another study,[24] in which patients who had sputum smear conversion after intensive phase of treatment had better HRQOL compared to those who did not convert. This further justifies the use of sputum smear conversion as a positive prognostic indicator in TB management programme.

This present study, revealed a significant relationship between the weight status and HRQOL. This also conforms to an earlier study that reported a positive correlation between weight gain and HRQOL.[25] This finding further highlights the importance of anti-TB drugs in the management of tuberculosis because they improve the physical signs and symptoms of patient suffering from tuberculosis e.g. improvement in appetite results in weight gain, and consequently better health-related quality of life of the patients.

**Conclusion**

This study observed that health-related quality of life of patients with tuberculosis after at least two months course of anti-tuberculosis drugs were fairly impaired in all domains. The two most affected health domains by tuberculosis in this study was environment health which assesses the influence of factors like financial resources, the work environment, accessibility and quality of health and social care, transport, freedom, physical safety and security, and opportunities for leisure activities on HRQOL. It is followed by psychological health which assesses the impact of the patients' own thoughts about his/her body image and appearance, negative and positive feelings, self-esteem and personal beliefs on HRQOL.

The occupational class, age, gender and educational status were found to be the determinants of health related quality of life of patients with tuberculosis. There were also, significant relationships between HRQOL and the objective clinical parameters; weight gain, sputum smear conversion which are used as the positive prognostic indicators in TB management programme.

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# Practice of Anaesthesia and Surgery in a Rural Clinic: Meeting the Challenge

Paul Dienye, Kaine Diete-Spiff, Nkemdilim Chukwuma

Department of Family Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

**ABSTRACT**

**Practice of Anaesthesia and Surgery in a Rural Clinic: Meeting the Challenge**

This is a descriptive prospective study aimed at describing the scope of surgery and anaesthetic practice in a rural clinic in Ngo, Nigeria. All the medical records of patients that fulfilled the inclusion criteria and managed in the clinic were retrieved and analysed. Out of 6911 patients who attended the clinic within the period, 575 (8.32%) medical records of surgical patients were retrieved. Fifteen (2.60%) were referred to tertiary health centres for expert management of their surgical conditions. Of the remaining 560 medical records that were retrieved 551(98.4%) met the criteria for inclusion and had their surgical pathology treated in 583 procedures. The most common surgical problem encountered in the rural clinic was hernias(39.75%) done mainly using 1% xylocaine local anaesthesia (63.64%). The most commontype of anaesthesia used in the clinic was ketamine anaesthesia(53.90%). Mortality recorded within the period was in two (0.4%) women who had eclampsia and severe post partum haemorhage. The result suggests that adequately trained family physicians can meet the challenge of scarcity of surgeons and anaesthesiologists in the rural areas satisfactorily.

**Key Words:** Rural clinic, Nigeria, Anaesthesia, Surgery, Personnel

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## Introduction

The word 'Anaesthesia' was derived from the Greek word 'Anaistheto,' meaning insensibility. Several approaches were used by surgeons to administer anaesthesia but the most successful was diethyl ether. Its use was successfully demonstrated in the induction of general anaesthesia by William Morton, a surgeon.[1] With advances in technology, refinements in anaesthetic equipment and drugs, and a focus on education and training, there have been major improvements in quality and safety in anaesthesia.[2] These made surgery much easier, safer and of course painless. Even with this development, anaesthetists working in some developing countries in sub-Saharan Africaand in overseas medical missions have described the poor state of anaesthesia and other medical services in these countries.[3]

**Corresponding author:**
Paul Dienye, Department of Family Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.
E-mail: pdienye@yahoo.com
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The rural areas, characterized by inadequate infrastructure, communication and essential public utilities such as potable water, electricity supply and access roads[4] are the worst hit by this inadequacy. Unfortunately, about 70% of the Nigerian population live in the rural areas and suffer from this shortfall. Trained and quality staffs are often difficult to hire and retain. Regrettably, most of the surgical problems such as hernia, hydrocele, septic wounds, and emergencies like obstructed labour, acute appendicitis, duodenal ulcer perforations, blunt trauma to the abdomen or the thorax, minor and simple fractures[5] are common in these areas. To contain the challenge created by lack of staff, reliance on non-physicians who are trained to provide surgical services in rural hospitals has become imperative in some African countries.[6] Although they may be able to discharge such functions, they cannot be compared with the professionals in efficiency. The ideal doctor in such locations must be competent enough to handle most of the health problems, including the technique of administering anaesthetic agents as well as inducing regional analgesia.

This article aims to highlight our experience having performed a large number of surgical operations under different types of anaesthesia at the Bethesda Clinic, Ngo town in Andoni Local Government Area of Rivers State over a period of

12 years. The authors are not aware of any previous study in the area.

**Materials and Methods**

**Study design**

This is a retrospective study of surgical patients seenin Bethesda Clinic Ngo.

**Setting**

Bethesda Clinic is a ten bedded facility located in Ngo. Ngo is a rural Niger Delta town in Andoni Local government area of Rivers State. The town is accessed from Port Harcourt after a journey of 1.5 hours by boat or a longer journey by road of about two to three hours depending on the traffic situation, followed by a 30 minutes boat ride. It is a typical rural community. The major occupation of the people is fishing. This has been adversely affected by years of environmental degradation associated with oil exploration and spillages, resulting in a very high level of poverty in the area. The service in Bethesda Clinic is general practice oriented and therefore a wide range of patients (surgical, medical, gynaecological and paediatric) are treated. The clinic is also used by locals from neighbouring fishing communities located on small islands. Transport from the islands to Ngo is mainly by hand-pulled canoes, which is slow and difficult. There is a landing jetty constructed behind the clinic to receive patients brought from neighbouring communities. Bethesda clinic occasionally allowed part-payment of hospital bills if responsible members of the community sign as sureties for them. This enabled occasional use of the facility despite financial hardship.

**The practice**

Staffing

Primary care team consisted of:

1. A consultant family physician that had his postgraduate training in the National Postgraduate Medical College of Nigeria and the West African College of Physicians while working in rural mission hospitals in Nigeria under the tutelage of experienced surgeons.
2. Six nurse auxiliaries trained by the family physician.
3. A cleaner.

Equipments related to anaesthesia include:

- Ambu bag
- A set of airways
- Foot suction
- Spinal needles of various sizes
- Emergency tray containing necessary drugs.
- Intravenous canular and butterfly needles of various sizes.

Protocol for safe anaesthesia used was as follows:

1. Thorough history and physical examination of the patient.
2. Basic investigations such as urinalysis and haemoglobin to rule out diabetes and anaemia respectively.
3. Preoperative correction of fluids, electrolytes, loss of blood, shock etc.
4. Proper written consent for surgery and anaesthesia and its complications.
5. The maximum dose of local anaesthetic agents per kg body weight of the patient was pasted on the wall and must be adhered to.
6. Intravenous access must always be secured, preferably in a large vein.
7. Vital signs must be monitored during every procedure under any form of anaesthesia.
8. NG tube must be passed to empty the stomach in emergencies reporting after meal.
9. The following types of anaesthesia were practiced: a) local and regional anaesthesia with xylocaine b) general anaesthesia with ketamine.
10. Most important: Performing surgical procedures on patients in precarious states such as neonates, uncontrolled diabetes etc must be avoided if possible. Such patients should be stabilized and referred.

The choice of which anaesthetic to use depends on a number of factors:

- Patients' factors
  - Age
  - Pregnancy status
  - History of allergies
  - Other medical conditions such as renal or hepatic failure, cardiac problems
  - Current medications
- Procedure being performed
  - Consider site
  - Consider area involved
  - Consider duration of operation
- Doctor's own preference and experience.

The dosage of the anaesthetic drugs used was:

*Ketamine*

Intravenous route: a loading dose of 1.5 to 2.0 mg/kg in children or 1.0 mg/kg in adults was administered over 30 to 60 seconds. Additional incremental doses of ketamine were administered (0.5 to 1.0 mg/kg) in the event of inadequate anaesthesia or if repeated doses were necessary to accomplish a longer procedure.

Intramuscular route: dose of ketamine in children was 4 to 5 mg/kg (the IV route was preferred for adults).

*Xylocaine*

Regional block

For saddle block, 1 ml and 2 ml of 5% xylocaine was used for saddle block and spinal anaesthesia respectively.

Local infiltration

Maximum dose of plain xylocaine without vasoconstrictor (ie. epinephrine) used for local infiltration was 3-4.5 mg/kg, not exceeding 300 mg (30 ml of 1% xylocaine) at once. Xylocaine with vasoconstrictor was not used in the clinic.

Selection

Using the patients' attendance register and operations register, the hospital numbers of all the patients who had surgical problemswithin the study period were compiled. Their medical records were retrieved and reviewed. Information sought included sociodemographic characteristics, type of surgical operation and type of anaesthesia. They were extracted from the records and transferred to a data sheet and finally stored on a computer. The records of the surgical patients who were not operated but were referred to other health facilities were also retrieved. The records that were deficient in these parameters were excluded from the study. The data was analysed using 2010 Microsoft Excel Worksheet and presented as figures and percentages in tables.

**Results**

Out of a total of 6911 patients who attended the clinic within the period, 575 (8.32 %) medical records of surgical patients were retrieved. Fifteen(2.60%) were referred to tertiary health centres for expert management ofsurgical conditions such as benign prostatic hyperplasia (4), carcinoma of the prostate (1), hyperthyroidism (1), carcinoma of the cervix (2), carcinoma of the breast(2), head injury(1), penile fracture(1) and gunshot injury(3). Of the remaining 560 medical recordsthat were retrieved 551(98.4%) met the criteria for inclusionand had their surgical pathology treated in 583 procedures.There were 348(63.16%) males and 203(36.84%) females. Their age ranged from two months to 68 years with a mean of 29 ± 12.67 years. Majority of the patients (41.02%) belonged to the 25 -44 years age bracket (Table 1). The commonest anaesthesia used in the clinic was ketamine (53.90%). Topical anaesthesia was the least used in only one case (Table 2). Most of the patients (39.75%) had herniorrhaphy which was done mainly using 1% xylocaine local anaesthesia (63.64%). Others included appendectomy (18.01%) and caesarean section (16.81%). The cases classified as others (4.46%) included toe nail avulsion, excision of ganglion, excision of lipoma, suturing of lacerations`(Table 3).Mortality recorded within the period was in two (0.4%) women who had eclampsia and severe post partum haemorhage.

**Discussion**

Among the components of Primary Health Care (PHC) is the treatment and care of common health conditions in the community. Some surgical conditions such as hernias, thoughcommon in the rural areas, are not captured by PHC teams in Nigeria. A possible reason for this deficiency is the severe shortage of surgical skills in the health manpower of local government PHC teams in Nigeria.

The rural population is supposed to be made up of mainly aged people who should have a large percentage of surgical problems. In this study, most of the surgical problems were found in patients within the 25 -44 years age bracket. This is similar to the findings by Ojo et al in a rural health outreach in Nigeria.[5] The lower percentage of the elderly surgical patients could be attributed to the low life expectancy which characterise rural populations in most developing countries.

In this study, herniorrhaphy was the commonest surgical procedure encountered. This corroborates with the findings by previous researchers who posited that it constitutes a significant proportion of the work load in rural general surgical practice.[5] The 43.05% incidence of herniorrhaphyin this study is very high when compared with findings in East African countries (175 per 100,000),[7] Ghana (1400 per 100,000)[8] and globally(15% - 18% ).[9] The large number of cases seen in this study could have been an accumulation of cases over the years due to the absence of any medical facility in the area that could perform any surgical operation prior to 1995 when the clinic was established. Other reasons attributable to this high incidence include high level of poverty, poor attitude of rural people to their health problems, ignorance[5], not wanting to travel long distances to get routine checkups and screenings in the towns and unpleasant city experience.[10] The occupation of the people which is mainly fishing could have also predisposed them to this pathology. The range of other surgical operations performed in the clinic was similar to that performed in other rural facilities.[5]

Apart from infrastructural deficiencies, one of the major challenges of a rural surgical practitioner is the delivery of safe anaesthesia. He works in a

**Table 1.** Age and sex distribution of anaesthesized patients

| Age (years) | Sex | | Total (%) |
|---|---|---|---|
| | Male | Female | |
| <5 | 19 | 8 | 27(4.90) |
| 5-14 | 49 | 19 | 68(12.34) |
| 15-24 | 52 | 30 | 82(14.88) |
| 25-34 | 65 | 53 | 118(21.42) |
| 35-44 | 61 | 47 | 108(19.60) |
| 45-54 | 59 | 28 | 87(15.79) |
| 55-64 | 28 | 12 | 40(7.26) |
| >65 | 15 | 6 | 21(3.81) |
| Total | 348 | 203 | 551 |

**Table 2.** Types of anaesthesia used in the clinic

| Type of anaesthesia | Number | Percentage |
|---|---|---|
| Ketamine | 297 | 51.7 |
| 1% xylocaine + ketamine | 13 | 2.36 |
| 1% xylocaine local | 143 | 33.21 |
| Spinal | 79 | 8.53 |
| Saddle block | 15 | 3.45 |
| Axillary block | 3 | 0.54 |
| Topical | 1 | 0.18 |

**Table 3.** Types of surgery performed and anaesthesia used in the clinic

| Types of surgery | Anaesthesia used | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Ket | Xyl+Ket | Xyl loc | Spinal | Sad. Blk | Axil | Top | Total |
| Herniorrhaphy | 86 | - | 91 | 42 | - | - | - | 251(43.05) |
| Appendectomy | 105 | - | - | - | - | - | - | 105(18.01) |
| Caesarean section | 60 | 13 | - | 25 | - | - | - | 98(16.81) |
| Hydrocelectomy | 6 | - | 46 | - | - | - | - | 52(8.92) |
| Vag. Hyst | 5 | - | - | 7 | - | - | - | 12(2.06) |
| Myomectomy | 5 | - | - | 1 | - | - | - | 6(1.03) |
| Exploratory lap | 8 | - | - | - | - | - | - | 8(1.37) |
| Anal surgery | 6 | - | - | 4 | 15 | - | - | 25(4.29) |
| Others | 16 | - | 6 | - | - | 3 | 1 | 26(4.46) |

solitary environment and does not have the services of a physician or nurse anaesthetist. For such a practitioner, a safe policy is to become familiar with a limited number of drugs for anaesthesia and analgesia to be able to overcome this challenge.[11] The choice of an appropriate method for the right patient will result in minimal morbidity and mortality.

The commonest anaesthetic agent used in the clinic was ketamine. This has been reported as the commonest anaesthetic agent available in developing countries.[2] Green posited that it is used widely in resource-limited settings because of its excellent safety profile.[12] The use of ketamine on majority of the patients in this study was based on the perception that it is safe and cheap even in the single handed surgeon.[13] Ketamineinduces dissociative sedation which is characterized by a trancelike cataleptic state, profound analgesia and amnesia, with retention of protective airway reflexes, spontaneous respirations, and cardiopulmonary stability. It supports maternal blood pressure during maternal hypotension as in post partum haemorrhage. There is a dose dependent rise in maternal blood pressure that makes ketamine less suitable for use in pre-eclampsia.[14] These attributes may explain why ketamine has remained the anaesthetic drug of choice in the developing world.

Although spinal anaesthesia is regarded as a simple and effective anaesthetic technique for appendectomy[15], ketamine was used in all cases of appendectomy in this clinic. Spinal anaesthesia has some disadvantages for appendectomy which made ketamine more popular in this clinic. These include pain from peritoneal irritation if the block is not high enough, risk of high spinal, chance of anaesthesia wearing off if surgery is prolonged, hypotension and post-dural puncture headache. Furthermore, some patients may not tolerate surgery while awake, even when sedated.[16]

Xylocaine in the form of local or regional anaesthetic was the most frequently used in the clinic. Regional anaesthesia is the recommended anaesthetic technique in resource poor environments. It has the advantages of being simple, effective, safe and requiring inexpensive equipment[17] and is relatively free from toxicity and sensitivity. Xylocaine local and spinal anaesthesia was the commonest used techniques in the cases of herniorrhaphy in the clinic. Xylocaine local anaesthesia was preferable based on the recommendation from previous study that the use of spinal anaesthesia should be reduced in favour of local anaesthesia to enhance recovery and to reduce costs.[18] Adrenaline, when added to local anaesthetics, delay their absorption velocity from the site of injection.

Xylocaine spinal anaesthesia was used in some cases because it offers a safe, cheap and easy anaesthesia in poor resource hospitals.[13] Advantages include avoidance of general anesthesia and the airway management concerns that accompany general anesthesia. Additional benefits may include reducing the metabolic stress response to surgery, reduction in blood loss, decrease in the incidence of venous thromboembolism, reduction in pulmonary compromise (particularly in patients with advanced pulmonary disease), and the ability to monitor the patient's mental status.[19]

**Implications for Planning and Training for Medical Practitioners in Rural Areas**

This study has exposed the fact that one of the greatest needs in the Nigerian Health sector is the extension of medical services to the rural dwellers. Surgeons and anaesthetists are in extremely short supply in the rural areas in these areas which harbour most of the surgical pathologies.[20]

In some countries, the undergraduate training prepares students for career in rural practice.[21] Curran et al suggested that thepopulation of physicians in the rural communities can be boosted if the medical schools recruit rural students, design rural-oriented medical curriculum, encourage rural practice learning experiences and implement advanced procedural skills training.[22] Unfortunately in most developing countries in Africa, current hospital based medical education and training programs are not adequately preparing junior doctors for rural and remote practice.[23] Furthermore, in Nigeria, the undergraduate family medicine is not popular even though it is embraced by most universities globally. A more comprehensive approach to this problem is to make medical treatment less fragmented by breaking the boundaries between the various medical/surgical specializations.[24] This will promote the relevance of generalist physicians (general practitioners and family physicians) with surgical and obstetric skills which are the mainstay of surgical procedures in many sub-Saharan countries, including Nigeria.[25] The Postgraduate Medical Collegesin Nigeriahas adopted this approach in their residency training programme in general practice/family medicine to give adequate

surgical exposure to residents who will eventually function as gatekeepers in rural and remote communities.

**Strengths and Limitations of this Study**

The strength of this study is that it has been able to prove that with good training family physicians can be able to give satisfactory treatment to patients with surgical complaints in rural areas. The main limitations of this study include theretrospective design which did not allow a more detailed study.

**Conclusion and Recommendations**

There commonly exist surgical pathologies in the rural areas due to inadequacy of surgeons and anesthesiologists. The commonest surgical problem in Bethesda Clinic Ngo was hernias and the commonest anaesthesia used was ketamine anaesthesia. To be able to render simple surgical services to rural populations satisfactorily, it willbe necessary to make medical treatment less fragmented by breaking the boundaries between the various medical/surgical specializations and encouraging junior doctors to specialize in general practice/ family medicine. Since the general practice/family medicine residents are effectively trained in the faith based hospitals which at present are not functioning optimally, it is therefore necessary for the federal government to formulate policies to assist the faith based hospitals in the training of these specialists. A legislation to compel the Universities to start undergraduate programmes in general practice/ family medicine will also prepare young doctors to embrace a career in rural practice.

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# Extending Community Based Health Care Services to Counter the Multi-Dimensional Threat of Hypertension

Saurabh RamBihariLal Shrivastava, Prateek Saurabh Shrivastava, Jegadeesh Ramasamy

Shri Sathya Sai Medical College & Research Institute

**ABSTRACT**

**Extending Community Based Health Care Services to Counter the Multi-Dimensional Threat of Hypertension**

Hypertension has been identified as an important public health concern of global distribution and it is one of the key risk factor for most of the cardiovascular diseases. Rational and adequate control of hypertension is a key element in the prevention of hypertension induced complications. An extensive search of all materials related to the topic was done in Pubmed, Medline, World Health Organization website and Google Scholar search engines. Keywords used in the search included hypertension, cardiovascular disease, public health, lifestyle modifications, and awareness. A diverse range of socio-demographic and health system related factors have been acknowledged in the causation of the disease. As the natural history of hypertension is complex the strategy to combat it also should be multi-pronged based on the pre-existing factors in different settings. Altogether, although some progress has been observed in the areas of community awareness and therapeutic control of blood pressure, the need is to implement sustainable and cost-effective interventions that will not only halt but also reverse the rising trend of hypertension.

**Key Words:** Hypertension, Public health, Awareness, Diet, Physical inactivity

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## Introduction

Cardiovascular diseases usually occur owing to the abnormalities in the heart and blood vasculature, and essentially include conditions like coronary heart disease (CHD), hypertension, stroke, peripheral vascular disease, rheumatic heart disease, and cardiac failure.[1] The recent global estimates suggest that although incidence of CHD has shown a declining trend in most of the developed countries, the situation remains quite challenging in low resource settings that contributes to more than half of the worldwide burden.[2]

Hypertension has been identified as an important public health concern of global distribution and as one of the key risk factor for most of the cardiovascular diseases.[3] The World Health Organization (WHO) current trends suggest that hypertension affects almost 33% of adults aged 25 and above worldwide.[4] It is further responsible for causation of 50% cases of coronary heart diseases and almost 67% cases of strokes.[5,6] In addition, it has been projected that eventually by the year 2030, hypertension will be the main contributing factor in 23 million cardiovascular deaths.[4]

Inadequate or incorrect management of hypertension despite the availability of effective anti-hypertensive drugs results in a wide gamut of complications varying from atherosclerosis; multi-organ damage; disability; deterioration in quality of life; and finally death.[2,7,8,9] Rational and adequate control of hypertension is a key element in reducing the rates of hypertension induced-organ damage. Studies across the globe have again and again revealed that prevention of hypertension is possible, and early detection and initiation of effective treatment can significantly reduce the aftermaths of the disease.[10,11,12,13] Thus, implementation of effective population-based primary and secondary preventive strategies should be considered as the key elements while planning health policies.[14]

**Corresponding author:**
Saurabh RamBihariLal Shrivastava
Shri Sathya Sai Medical College & Research Institute
E-mail: drshrishri2008@gmail.com
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Accepted Date: April 27, 2014

The objective of the current review is to explore the magnitude of the problem of hypertension and its complications, and to identify the socio-demographic determinants that can be attributed to the same issue. Further, the next objective is to suggest feasible, cost-effective population-based measures which, if implemented globally will reduce the magnitude of the disease.

**Methods**

An extensive search of all materials related to the topic was done in Pubmed, Medline, World Health Organization website and Google Scholar search engines. Relevant documents, reports, research articles focusing on the awareness, potential risk factors / determinants of hypertension and measures to combat the same published in the period 1997 – 2013 were included in the review. The identified articles were then selected based upon the compatibility with the current review objectives and later re-grouped into different sections based upon the scope of review. Keywords used in the search include hypertension, public health, awareness, diet, physical inactivity.

**Potential determinants attributed in the development of hypertension**

A diverse range of socio-demographic and health system related factors such as old age;[15,16,17] male gender;[1,18,19] illiteracy;[16,20,21] low income;[15] poor socioeconomic status;[22,23] race;[24] ethnic variations;[25] genetic influence;[26,27] disparities in urban-rural areas;[3] globalization;[25] low awareness about risk factors and treatment compliance among population;[28,29] co-existing diseases like diabetes mellitus;[15,16,22,30] stress;[31] obesity / overweight / increased body mass index and waist circumference / hypercholesterolemia;[16,29,32,33] dietary practices and more consumption of saturated fats;[34,35,36] excessive salt consumption;[37,38,39] alcohol intake;[35,40] tobacco consumption;[41,42] physical inactivity;[43] not undergoing regular screening activities;[44] lack of trust on physicians;[26] improper and incomplete management of hypertension;[29] poor health care seeking behavior;[45,46] and perceived barriers among people at community level, such as limited resources – availability of trained manpower, access to the health system / cultural expectations and values;[47,48,49] have been attributed to the development of the disease.

**Recommended public health measures**

Even though hypertension is an absolutely preventable condition, the asymptomatic nature of this disease renders it often under-diagnosed and undertreated. Further, the natural history of hypertension is extremely complex, and thus the strategy to combat it should be multi-pronged based on the contributory factors.[1] Currently, the need is to formulate a comprehensive and integrated approach to facilitate early detection in both high risk and the general population and thus reduce the magnitude of the disease.[50] In addition, recent JNC-8 classification should be adopted universally by health care practitioners to facilitate standardized management of hypertension patients.[51,52] Further, execution of other long-term measures such as improving the socioeconomic/literacy status;[16,20,23] creating an enabling environment for increasing awareness of community about risk factors;[28,29] encouraging adults to get tested for blood pressure;[1] advocating and extending regular screening activities;[44] developing community-based interventions and strategies as a part of primary prevention measures;[1,47,48,50,53] secondary prevention and targeted interventions towards high-risk group patients;[29] facilitating the active involvement of health workers;[1] orienting private practitioners through a health professional education program;[54,55] fostering early detection of clinical cases and timely implementation of cost-effective secondary prevention measures to prevent long-term complications;[31,53,54] involving voluntary organizations and multiple sectors;[54] encouraging the consumption of a diet rich in fruits, vegetables, tubers and legumes;[34] advocating lifestyle modification measures like weight control, increased physical activity, limited alcohol intake, no tobacco use, and reduced dietary saturated fat and salt intake;[11,35,37,40,56] universal adoption of WHO cardiovascular risk prediction charts;[50] and therapeutic administration of bioactive natural constituents obtained from food sources;[57] can be strategically planned. The Government can plan to implement above suggested measures in collaboration with the local health sector and different stakeholders in a flexible manner for the benefit of both the high-risk groups and the general population.

**Implications for practice**

The current review clearly implies that a comprehensive national program for non-communicable diseases well supported by the awareness campaigns is the need of the hour. Precise guidelines should be designed and

implemented for appropriate treatment of hypertensive patients depending on their blood pressure levels and presence of co-existing diseases. All the medical practitioners from both the public and the private health sectors, including doctors from other medical disciplines should be trained in the correct management of hypertension. The outreach health staff workers should be empowered in different aspects of lifestyle modifications so that they can spread the message to each and every household during their routine home visits. Moreover, sustained political will is the crucial element for building a strong network between national and international agencies for ensuring external monitoring.

**Implications for research**

Multiple areas have been identified that still need further exploration for promoting better understanding among the masses, physicians and the policy makers. Essentially, the need is to design and conduct large community-based qualitative studies to assess the level of awareness, knowledge and practices among the general population regarding potential risk factors and the importance of lifestyle modifications in different settings. Research should also be conducted to explore the role of dietary factors, physical inactivity, and the prevalent barriers in the causation of hypertension in heterogeneous settings.

**Conclusions**

Altogether, although some progress has been observed in the fields of community awareness, and control of blood pressure levels, the need is to implement sustainable and cost-effective interventions that will not only halt but also reverse the rising trend of hypertension.

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# Tiroid Nodüllerinin Değerlendirilmesinde Klinik, Ultrasonografik ve Sitopatolojik Bulguların Yeri

Ece Harman, Gökçen Ünal Kocabaş, Hüseyin Can

İzmir Katip Çelebi Üniversitesi Atatürk Eğitim ve Araştırma Hastanesi, Endokrinoloji Kliniği
İzmir Bozyaka Eğitim ve Araştırma Hastanesi, Endokrinoloji Kliniği
İzmir Katip Çelebi Üniversitesi Atatürk Eğitim ve Araştırma Hastanesi, Aile Hekimliği Kliniği

**ÖZET**

**Tiroid Nodüllerinin Değerlendirilmesinde Klinik, Ultrasonografik ve Sitopatolojik Bulguların Yeri**

İyot eksikliği olan bölgelerde yaşayan kadınlarda tiroid nodülü insidansı artmıştır. Çocukluk çağında veya adolesan dönemde iyonize radyasyona maruz kalmış bireylerde ise hem tiroid nodülü hem de tiroid kanseri riskinin arttığı gösterilmiştir. Tiroid nodülü varlığında; hastanın yaşı, nodülün boyutu, serum tirotiropin düzeyleri, tiroid otoimmün hastalığı öyküsü, nodülün sıcak ya da soğuk olması, nodülün ultrasonografi bulguları değerlendirilmeli ve tiroid kanseri riski ortaya konmalıdır. Tiroid nodüllerinin incelenmesi için ince iğne aspirasyon biyopsisi yöntemi önerilmektedir. Ancak, sitolojik değerlendirme olguların %10-30'unda kesin sonuç verememektedir. Belirsiz sitolojiye sahip nodüllere yaklaşım ve başlangıçtaki ince iğne aspirasyon biyopsisi incelemesi sonucu benign olan nodüllerin izlem süreci tartışmalıdır. Bethesda sitolojik sistemi ve tiroid nodüllerinin sitolojik örneklerinde çeşitli moleküler belirteçlerin değerlendirilmesi tiroid malignitesi tanısında doğruluk oranını arttırmaktadır. Bu derlemede, tiroid nodüllerinin değerlendirilmesi sürecinde yararlanılabilecek değişkenler ve bunların uygulamaya yansımaları incelenmiştir.

**Anahtar Kelimeler:** Tiroid nodülü, Ultrasonografi, Ince iğne aspirasyon biyopsisi, Kanser

**ABSTRACT**

**The Role of Clinical, Ultrasonographic and Cytopathologic Findings in the Evaluation of Thyroid Nodules**

Incidence of thyroid nodules in women living in iodine poor areas has been established to be high. Also it has been shown that; there has been increase in the risk of of thyroid nodules and thyroid cancer in patients exposed to radiation during childhood and adolescence. In the presence of thyroid nodule; parameters such as the age of the patient, the size of the nodule, thyrotropin levels in the serum, the history of autoimmune thyroid disease, functional analyzes of the nodule (hot/cold), and ultrasonographic findings must be considered and thyroid cancer risk must be determined. Fine needle aspiration biopsy has been proposed as a method for the evaluation of thyroid nodules. However, conclusive results cannot be obtained in 10-30% of the cases obtained by cytological evaluation. The approaches to the nodules with indeterminate cytology and the duration of observation of the diagnosed to be benign nodules after the fine needle aspiration biopsy should be debated upon. The accuracy in thyroid cancer diagnosis has been increased by the cytological classification of Bethesda and evaluation of several markers in cytological specimens. In this review we have focused on the parameters that could be employed in the evaluation of thyroid nodules and their clinical reflections.

**Key Words:** Thyroid nodule, Ultrasonography, Fine needle aspiration biopsy, Cancer

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**Corresponding author:**
Ece Harman, İzmir Katip Çelebi Üniversitesi Atatürk Eğitim ve Araştırma Hastanesi, Endokrinoloji Kliniği, İzmir-Türkiye
E-mail: ecarmu@gmail.com
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## Tiroid nodülleri

Tiroid nodülleri hastanın kendisi tarafından veya hekimin fizik muayenesi sırasında belirlenebileceği gibi görüntüleme incelemeleri sırasında tesadüfen de saptanabilir. Tiroid bezi muayenesinde palpe edilebilen nodül sıklığı %3-7 iken, klinik olarak

saptanamayan ancak ultrasonografide tespit edilen nodül sıklığı %20-76 arasında rapor edilmektedir.[1-4] Tiroid hastalığı için genetik yatkınlık, steroid hormonlarının etkisi tartışılmaktadır. İn vitro olarak sıçanlardaki Fischer Rat Thyroid, Low Serum;%5 (FRTL-5) hücrelerde ve tiroid kanser hücre hatlarında östrojenin büyümeyi uyarıcı etkisi tanımlanmıştır. Ayrıca 17β-östradiol'ün normal tiroid dokusunda ve tiroid tümörlerinde büyüme faktörü bağımlı sinyal yolağını aktive ettiği gösterilmiştir.[5]

Neoplazi ve hiperplazinin etiyolojisinin saptanmasında tümörün klonal büyümesi önemli bir araçtır. Hiperplazi; iyot eksikliği gibi geri dönüşümlü dış uyaranlarla meydana gelirken, neoplazi; genetik değişimler gibi geri dönüşümsüz hücre içi hasarlanma ile oluşur. Dış guatrojenik uyaranlar (iyot eksikliği, tiroid uyarıcı hormon [TSH] etkisi vb.) tiroid kitlesini nadiren 3-5 kattan fazla büyütürken, hücre içi uyarıcılar 100 kat kadar artış oluşturabilir.[6,7] Yapılan çalışmalarda otonom tiroid nodülleri ve soliter soğuk tiroid nodüllerinin klonal orijini incelenmiş ve tiroid nodüllerinde klonal orijinli somatik mutasyonlar tespit edilmiş, mutasyon olmayan vakaların %50'sinden fazlasında monoklonal orijin saptanmıştır. Böylece gen mutasyonlarının da (Gsα proteini, ras onkogeni) neoplastik sürece katkıda bulunabileceği düşünülmektedir.[8-10]

Tiroid nodülleri; makroskopik, mikroskopik histopatolojik özelliklerine göre adenom, karsinom, hiperplastik lezyonlar olarak sınıflandırılmaktadırlar.[11] Adenomlar, folliküler epitelyumdan kaynaklanan enkapsüle lezyonlardır. İzole, makrofolliküler (kolloid), mikrofolliküler (fetal), trabeküler/solid (embriyonik) formda ortaya çıkabilirler.[12] Fonksiyonel (otonom) adenomlar, aşırı hormon sentezi ile kliniğe yansırken non-fonksiyonel adenomlarda hormon düzeylerinde değişiklik olmayabilir. Otonom adenomlar herhangi bir yaşta ortaya çıkabilirken, 60 yaş altı bireylerde nadiren toksik olabilirler.[13] Bu nodüller genel olarak benign olmakla birlikte nadir olgularda malignite bildirilmiştir.[14]

Nodüler hiperplastik lezyonlar multinodüler guatrda karakteristiktir ve folliküler hücre hiperplazisinden kaynaklanmaktadır. Papiller ve folliküler karsinomları kapsayan differansiye tiroid karsinomların yıllık insidansı 1-10/100.000'dir ve genellikle iyi prognoza sahiptirler. Dünyadaki en yaygın neoplazmlardan olup tüm kanserlerin yalnızca %1'ini oluştururlar.[11,15,16] Ultrasonografinin artmış kullanımı ve ultrasonografi eşliğinde yapılan ince iğne aspirasyon biopsisi ile sitolojik incelemenin yapılması, pek çok ülkede küçük boyutlu tiroid bez karsinomlarının tanı almasını kolaylaştırmıştır.[2,14] Böylece 1 cm'den küçük karsinomlar daha sık olarak saptanabilmektedir.

Ultrason eşliğinde ince iğne aspirasyon biyopsisi; 1 cm'den büyük ve 1 cm'den küçük olmasına karşın şüpheli özelliklere sahip (hipoekojenite, mikrokalsifikasyon, düzensiz sınır) nodüller için önerilmektedir.[17,18] Fonksiyonel tiroid nodülü varlığında sintigrafiye ek olarak serum TSH değerlendirilmesi yapılmalıdır.[16] Tiroid nodüllerinin %90-95'i fonksiyonel değildir ve benign tiroid nodülleri ile ilişkili mortalite oranı %1'den daha az bildirilmiştir.[2,11] Kadın cinsiyet, 20-45 yaş, 2 cm'den küçük nodül varlığı, birden fazla kadrana dağılım olmaması, kapsül yokluğu, lokalize lenf bezlerinin varlığı düşük malignite riski ile ilişkili faktörlerdir.[16,19,20] Yapılan çalışmalarda 16 yaş altı ve 45 yaş üstü bireylerde malignite riskinin yükseldiği bildirilmiştir.[2,19] Bazı çalışmalarda soliter (tek) nodülün, multipl nodül varlığına göre daha fazla malignite oranına sahip olduğu vurgulanmıştır.[21,22] Papiller karsinomu papiller hiperplaziden, folliküler karsinomu folliküler adenomdan ayırmak için genetik ve immünohistokimyasal belirteçlerden yararlanılabilir.

**Tiroid nodüllerinde TSH düzeyleri ve otoimmün hastalık**

Yapılan çalışmalarda nodüler guatrlı hastalarda artmış serum TSH düzeyleri ve artmış tiroid kanser riski arasında ilişki olabileceği bildirilmiştir. TSH düzeyi normal aralıklarda olsa bile TSH düzeyleri arttıkça tiroid malignite riskinde artış gözlenebilir.[23-26] Tiroid işlev bozukluğu olmayan 1500 hasta ile yapılan bir çalışmada, TSH düzeyleri 1.0-1.7 mU/L olan hastaların, <0.4 mU/L olanlara göre kanser riskinde artış olduğu vurgulanmıştır.[27] Yapılan diğer bir çalışmada; papiller tiroid karsinomu ve serum TSH düzeyleri arasında ilişki saptamış olup, levotiroksin tedavisi alan ve düşük serum TSH düzeyleri olan hastalarda papiller tiroid karsinomu prevalansında azalma gözlenmiştir.[26] Anıl ve arkadaşlarının yaptığı çalışmada Hashimoto tiroiditi tanısı alan hastalarda malignite oranı %1 iken kontrol grubunda %2.7 olarak saptanmış fakat istatiksel olarak anlamlı fark bulunmamıştır.[27] Musaka ve arkadaşlarının yaptığı bir çalışmada ise Hashimoto tiroiditi ve Graves hastalığı olan tiroid nodülüne sahip hastalarda kanser oranının arttığı

saptanmıştır.[28] Böylece, son yayınlarda tiroid nodülü araştırılırken anti-tiroid peroksidaz (anti-TPO), anti-tiroglobulin (anti-Tg) ve TSH düzeylerinin incelenmesi önerilmektedir.[2,16,17]

**Tiroid nodüllerinde tanısal yaklaşımlar**

Nodüler tiroid hastalığına sahip bireylerin değerlendirilmesinde; tiroid kanseri olasılığının dışlanması, işlevsel değerlendirme yapılması, eğer mümkün ise en iyi tedavi yaklaşımının uygulanabilmesi için nodülün patomorfolojik özelliklerinin aydınlatılması amaçlanmaktadır. Tiroid malignitesinin tanısı temel olarak histopatolojik incelemeye dayandırılmakta olup klinik olarak güçlü kanıtların varlığında (nodülün hızlı büyümesi, ultrasonografik bakının maligniteyi işaret etmesi, servikal lenf bezlerinin varlığı, ani başlayan ses kısıklığı vb.) tiroid nodülünden ince iğne aspirasyon biyopsisi ile elde edilen dokuların sitolojik incelemesini gerektirir.[29] Yapılacak diğer incelemeler konusunda ultrasonografi ve tiroid sintigrafi açısından görüş birliğine varılmıştır. Tiroid malignitesinin preoperatif tanısı için en sensitif ve spesifik yöntem ince iğne aspirasyonu ile elde edilen dokunun sitolojik incelemesidir.[30] İyot eksikliği olan bölgelerde etkilenmiş erişkin sayısının yüksek olması nedeniyle nodüler tiroid hastalığı olan tüm bireylere ince iğne aspirasyon biyopsisi yapmak mümkün olmayabilir. Kılavuzlara göre ince iğne aspirasyon biyopsisi için endikasyonlar; nodülün hipoaktif özellik taşıması, boyutlarının en az 10-15 mm olması şeklinde belirlemiştir.[29] İnce iğne aspirasyon biyopsisi en iyi koşullarda yapılmış olsa bile olguların %20'sinden fazlasında tanı konulamaz ya da şüpheli olabilir. Bu durumda biyopsi tekrarlanmalıdır.[31] Tüm ince iğne aspirasyon biyopsilerinin %10-20'sinde şüpheli sitoloji ile karşılaşılabilir. Bu olgularda kanserden Hurtle hücreli adenomun; papiller kanserin folliküler varyantından folliküler kanserin; folliküler kanserden folliküler adenomun ayrımını yapmak önemlidir.[32] Bu ayrımların yapılmasında henüz rutin kullanımda yer almamasına rağmen galectin-3, tiroperoksidaz (MoAb47), PAX8/PPARγ yeniden düzenlemesi, BRAF mutasyonu gibi çeşitli belirteçler kullanılabilmektedir.[33]

**Tiroid nodüllerinde sintigrafi, manyetik rezonans ve flor18-deoksi-glukoz pozitron emisyon tomografinin kullanımı**

Tiroid sintigrafisi; destrüktif tiroidit, ektopik tiroidit, hiperfonksiyon gösteren tiroid nodüllerinin araştırılması için uzun yıldır kullanılan bir yöntem olmakla birlikte izofonksiyon ve hipofonksiyon gösteren tiroid nodülerinin tanısında yeri sınırlıdır.[2,3,16] Sintigrafi, fonksiyonel nodüllerin değerlendirilmesinde önerilmektedir.[17] Nonfonksiyonel tiroid nodülleri %10-20 oranında malignite riski taşırken hiperfonksiyonel tümörler çoğunlukla benigndir.[2,16,17] Ayrıca sintigrafi belirsiz sitolojiye sahip nodüllerin fonksiyonel durumunu saptamak için ek yarar sağlayabilir. Dinamik nükleer manyetik rezonans görüntüleme metodu kullanılarak yapılan incelemeler giderek artan sıklıkla kullanılmaktadır. Gupta ve arkadaşları tiroid folliküler neoplazmlarının ayrıt edilmesinde dinamik nükleer manyetik rezonans spektroskopi tekniklerini kullanmışlardır.[34] Ayrıca, Kim ve arkadaşları tiroid nodüllerindeki malignitenin saptanması için flor18-deoksi-glukoz pozitron emisyon tomografi (PET) yöntemini kullanmışlar ve düşük etkinlikte bir yöntem olduğu sonucuna varmışlardır.[35]

**Tiroid nodülleri ve ultrasonografi**

Boyun ultrasonografisi; tiroid nodüllerinin karakteristik özellikleri, boyutu, yerleşimiyle ile ilgili bilgi vermesi açısından en sık kullanılan görüntüleme yöntemidir.[2,4,16] Leenhardt ve arkadaşları tiroid nodüllerinde malignite açısından hipoekojen görünümün orta dereceli pozitif kestirim değerine (%50-63) sahip olduğunu ve ultrasonografik incelemenin yüksek duyarlılık (%75) ve özgüllük (%61-83) gösterdiğini bildirmişlerdir.[36] Li ve arkadaşları papiller tiroid karsinom tanılı 104 hastayı incelemişler, 115 nodülün ultrasonografik özelliklerini değerlendirmişler ve mikrokalsifikasyon, santral kanlanma, düzensiz sınırın tiroid malignitesi ile direkt ilişkini bildirmişlerdir.[37] Tiroid nodüllerinin incelemesinde kullanılan ultrasonografi parametreleri Tablo 1'de gösterilmiştir.

Baier ve arkadaşları tiroid nodülü olan 944 hastada yaptıkları çalışmada laboratuvar, klinik ve ultrasonografi verilerini incelemiş; 45 yaşın altında olan bireylerde malignite olasılığının arttığı saptanmıştır.[38] Choi ve arkadaşları ise yaş ve malignite arasında ilişki saptamamışlardır.39 Literatüre göre, 4 cm'den büyük ve belirsiz sitolojiye sahip tümörlerde %10'dan %30'a varan malignite oranı bildirilmiştir.[17,36,37] Rosario ve arkadaşları belirsiz sitolojiye sahip olgularda malignite oranını %23,5 olarak bildirmişlerdir.[40] Bazı çalışmalarda, ultrasonografi bulgularına bakmaksızın yaş ve erkek cinsiyetin prognostik faktör olarak önemi vurgulanmıştır. Nodül boyutu

büyüdükçe her 1 cm'lik büyüme için kanser riski %39 oranında artmaktadır. Papiller tiroid karsinom için yapılan sitolojik inceleme sonucu şüpheli olanlarda malignite oranı artmıştır. [7-9,16,41]

**İnce iğne aspirasyon sitolojisi**

İnce iğne aspirasyon biyopsisi, tiroid nodüllerinin incelenmesinde kullanılan en önemli yöntemdir. Özgüllüğü (%72-100) ve duyarlılığı (%65-98) yüksektir.[2,42] Kanser saptanmasında kullanılan bu yöntemin yanlış pozitiflik oranı %0-7 iken yanlış negatiflik oranı %1-11'dir.[2] Ultrasonografi eşliğinde yapılması tercih edilmektedir. Choi ve ark., ultrasonografi eşliğinde yapılan ince iğne aspirasyon biyopsilerinin %16,1'inde yetersiz materyal elde edildiğini; bunun deneyimsizlik, kistik lezyonların ve makrokalsifikasyonların varlığına bağlı olabileceğini ifade etmişlerdir.[39] Akgül ve ark. yaptıkları çalışmada; klinik, nodül boyutu ve malignite arasında anlamlı ilişki saptamamışlardır.[43] Sitoloji sonucu belirsiz olan hastalarda nodül malignite oranı %12.6 olarak bulunmuştur. Konunun uzmanları olası dört sitopatolojik sonuç (benign, malign, şüpheli, nondiagnostik) tanımlamıştır.[16] Belirsiz lezyonların %70-80'i histopatolojik incelemede benign olarak saptanmıştır.[5] Sitopatolojik tanı için "Bethesta" sınıflama sistemi kullanılmaktadır (Tablo 2)[44]. Bu sınıflama sistemi, patolog-klinisyen-cerrahlar tarafından ortak dili konuşma adına tercih edilmektedir.

Bazı çalışmalarda, belirsiz sitolojisi olan nodüllerde sellüler atipi olduğunda malignite olasılığının arttığı ifade edilmiştir. Bununla birlikte, malign nodüllerin %66'sında, benign nodüllerin ise % 78'inde sellüler atipi saptanmaktadır.[45,46]

**Tiroid sitolojisi ile tümör belirteçlerinin ilişkisi ve klinik uygulamaları**

Bethesta sınıflama sisteminin III, IV, V. kategorilerinde moleküler immünositokimyasal belirteçlerden yararlanılabilir. Galektin-3 (Gal-3), belirsiz sitolojiye sahip folliküler lezyonlarda kullanılan en yaygın belirteçtir.[47,48] Bartolazzi ve ark. ile Pennelli ve ark., ince iğne aspirasyon biyopsisi sitolojik incelemelerinde Gal-ekspresyonlarını incelemişler ve yüksek sensitivite ile spesifite oranları saptamışlardır.[49,50]

BRAF (V600E) mutasyonu, papiller tiroid kanserde karakteristik olup şüpheli olgularda tanısal doğrulama için önerilmektedir.[18,51] Çeşitli çalışmalarda; BRAF, RAS, RET/PTC, PAX8/PPAR gama mutasyonlarının kanser tanısında önemli olduğu bildirilmiştir.[5,51] Cerruti ve ark., membran protein 1 ve kromozom 1 den elde edilen proteinlerin de tanısal doğruluğa katkıda bulunduğunu belirtmişlerdir.[52]

**Benign sitolojiye sahip tiroid nodüllerinin izlemi**

Başlangıçta benign sitolojiye sahip tiroid nodüllerinin tekrarlayan ince iğne aspirasyon biopsilerinde %5 oranında yanlış-negatif sonuçlarla karşılaşılabileceği ifade edilmiştir.[2,16] Solid komponent barındıran miks nodüllerde nodül boyut açısından yapılan iki ölçüm arasında %20'den az oranda büyüme varsa 3-5 yılda bir ultrasonografi ile izlem önerilmektedir.[2,17] Yapılan çalışmalarda, şüpheli ultrasonografi bulgularına sahip başlangıç sitolojisi benign olan nodüllerin izleminde artmış malignite oranları bildirilmiştir. Bu nodüllerin izleminde her 12-18 ayda bir ultrasonografi yapılması ve ince iğne aspirasyon biopsilerinin en az üç kez tekrarlanması gerektiği vurgulanmıştır.[53-55]

**Sonuç**

Yapılan çalışmalarda başlangıç sitolojisi benign olan nodüllerde tekrarlayan ince iğne aspirasyon biopsisi ve ultrasonografi ile 12-18 ay arayla yapılan incelemelerinin malignite tanısının kesinliği açısından önemli olduğu vurgulanmıştır. Bethesda kategori III ve IV sitolojisi olan ultrasonografik olarak malignite kriterlerine sahip nodüllerde cerrahi girişim ve histopatolojik korelasyon önerilmektedir. Belirsiz sitolojiye sahip olguların uzun dönem izleminde ince iğne aspirasyon biyopsi materyallerinin immünohistokimyasal belirteçler açısından incelenmesi gerektiği ifade edilmektedir. BRAF V600E mutasyonu olan ve HBME-1, Gal-3, CK-19 sitolojik ekspresyonları sergileyen Bethesda kategori III ve IV olguların artmış kanser riskinden dolayı cerrahi için iyi adaylar oldukları bildirilmiştir.

**Tablo 1. Tiroid nodüllerinin incelemesinde kullanılan ultrason parametreleri[1]**

| **Benign** | **Malign** |
|---|---|
| İzo ve hiperekoik | Hipoekoik |
| Makrokalsifikasyon | Mikrokalsifikasyon |
| Düzgün sınırlı olması | Düzensiz sınırlı olması |
| Nodül kenarında infiltrasyon olmaması | Nodül kenarında infiltrasyon olması |
| Anormal servikal lenf bezi yokluğu | Anormal servikal lenf bezi varlığı |
| Periferik nodüler vaskülarite artışı | İntranodüler vaskülarite artışı |

**Tablo 2. Tiroid sitopatolojilerinin tanımlanmasında kullanılan "Bethesda" sistemi[44]**

| | | **Kanser riski** |
|---|---|---|
| Nondiagnostik yada yetersiz (kist sıvısı, asellüler örnek) | | % 1-4 |
| Benign | Benign folliküler nodül | %0-3 |
| | Lenfositik tiroidit (Hashimoto) | |
| | Granülomatöz (subakut) tiroidit | |
| Anlamı tanımlanamayan atipi ya da anlamı belirlemeyen folliküler lezyon (Ne benign ne de malign) | | %5-15 |
| Folliküler neoplazm yada folliküler neoplazm şüphesi | | %15-30 |
| Malignensi şüphesi | Papiller karsinom şüphesi | %60-75 |
| | Medullar karsinom şüphesi | |
| | Metastatik karsinom şüphesi | |
| | Lenfoma şüphesi | |
| | Diğerleri | |
| Malignensi | Papiller tiroid kanseri | %97-99 |
| | Kötü diferansiye karsinom | |
| | Tiroid medullar karsinom | |
| | Anaplastik karsinom | |
| | Metastatik karsinom | |
| | Diğerleri | |

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