



## Full Length Review Article

### DIAGNOSTIC YIELD OF DIGITAL RECTAL EXAMINATION DURING ROUTINE PHYSICAL MEDICAL EXAMINATION IN A SUB- URBAN AFRICAN POPULATION

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#### ARTICLE INFO

##### Article History:

Received 17<sup>th</sup> March, 2016  
Received in revised form  
21<sup>st</sup> April, 2016  
Accepted 12<sup>th</sup> May, 2016  
Published online 30<sup>th</sup> June, 2016

##### Key Words:

Digital rectal examination,  
Relevance,  
Diagnostic yield,  
Clinical training.

#### ABSTRACT

**TOPIC:** Diagnostic yield of Digital Rectal Examination during routine physical medical examination in semi-urban African population.

**Introduction:** The higher frequencies of performing a DRE, diagnostic confidence, and adequacy were directly related to level of experience with the examination. Training in DRE technique has diminished and may be lost.

**Objective:** To assess the diagnostic yield of DRE in a semi-urban African population, thus estimating its relevance.

**Method:** This is a prospective observational hospital based study. Random consecutive consented adult patients are subjected to DRE.

**Results:** A total of 450 patients with mean age of 52.6 years were studied. Only 6.3% reported it to be discomforting, tolerability was neither significantly affected by the performer's status ( $\chi^2$  4.602, P 0.504) nor the patient's BMI ( $\chi^2$  4.6, p 0.79). DRE findings added information which modified the diagnosis in 10.7%, provide additional diagnosis in 22% and identify correct diagnosis which could have been missed in 16.7%. Change in working Diagnosis occurred in 7.3% of all patients, this appears to vary among the diagnosis groups and with patient's age (p= 0.648). Being overweight or not did not affect incidences of unrelated DRE findings ( $X^2$  0.449, p 0.5025, OR 1.2083).

**Conclusion:** DRE is very relevant in clinical practice.

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#### INTRODUCTION

Digital Rectal examination is a rather mundane clinical examination which consists of visual inspection of the perianal margin and digital palpation of the pelvic structures by inserting a finger through the ano-rectum. Digital Rectal Examination (DRE) is performed for a variety of clinical conditions ranging from gastrointestinal conditions such as altered bowel habit and rectal bleeding to lower urinary tract symptoms and sometimes gynecological conditions in females. Because It is a clinical examination which may reveal previously unsuspected benign or sinister conditions in the abdominal cavity, it was traditionally held in high respect by surgeons and it was considered a routine that must be satisfied in all patients presenting with abdominal symptoms and signs

before abdominal examination is dimmed completed (Manimaran and Galland, 2004). Deliberate training in the method of DRE has diminished over the years and the art is gradually being eroded because of availability of advanced diagnostic methods. The importance of DRE as a clinical skill needs to be re-established globally especially in low and middle income centres where resources are limited and management is often predicated on provisional clinical diagnosis following information gathered from history and clinical examination only. The DRE's role in medical school and advanced training, curricula needs to be re-established (Wrong *et al.*, 2012; Popadiuk *et al.*, 2002 and Rishi Balkissoon *et al.*, 2009). In some medical schools, for the purpose of training, mannequins are provided whereby the trainee, pretends as if it is a real patient and talk to it as such (Arin K Greene, 2003). The frequency of performing, the adequacy of the method and diagnostic confidence are directly related to level of experience with the examination (Rishi

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Balkissoon, 2009 and Arin K Greene, 2006). DRE has traditionally been part of clinical examination not only for patients who present with gastrointestinal (GI) problems, but also as screening examination for the elderly patients who are at risk of colo-rectal cancer or prostate cancer. Some literatures have questioned the importance of routine DRE in several patient sub-populations such as follow-up of prostate cancer patients, trauma patients and even in patients presenting with acute abdominal conditions such as acute appendicitis (Manimaran and Galland, 2004; Takada *et al.*, 2015; Byrne, 2009). These literatures notably are emanating from developed centers where modern diagnostic facilities are readily available and affordable. They contest the contribution of DRE to the clinical diagnosis and management of these patient subpopulations. The goal of this study is to find out the diagnostic yield of DRE during routine physical examination in a semi-urban African population and to determine whether the DRE is still relevant in modern medical practice, more so in a diagnostic-gadget poor setting.

## MATERIALS AND METHODS

This was a prospective cross-sectional observational study conducted at the surgical out-patient department of two hospitals in Nigeria (Manimaran and Galland, 2014). Ladoké Akintola University of Technology Ogbomosho Oyo State, a public tertiary institution and (Wrong and Drossman, 2012) Abake Medical Centre, a private institution with surgical bias, located in Osogbo, Osun State, both in Nigeria. All consenting adult patients presenting at the out-patient clinic, irrespective of their presenting symptoms were included in the study. Failure to grant consent was the exclusion criterion. The DREs were performed on all consented, consecutive patients by Registrars, Senior Registrars and consultants in surgical practice. The biodata of the patients, the DRE findings and other variables were recorded in a proforma. The data were analyzed using SPSS® statistical software version 16.0. Chi square was used for comparing the effect of some variables, with the level of significance put at  $p < 0.05$ .

## RESULTS

A total of 450 patients had their DRE findings recorded over a 4-week study period. The age of patients ranged from 18 – 90 years (mean age of  $52.66 \pm 17.87$  yrs). Sixty-nine percent were males. The age distribution of all patients is shown in Table 1.

**Table 1. Age group of 450 patients that had DRE**

Age group( years)	Frequency	Percent
30 and below	57	12.7
31 - 40	84	18.7
41 - 50	81	18.0
51 - 60	57	12.7
61 - 70	93	20.7
> 70	78	17.3
Total	450	100.0

Majority of the patients presented with either gastrointestinal or urological symptoms. The grouping of indications for presentation is shown in Table 2. Thirty percent of the DREs were performed by consultants, 6.3% patients reported that DRE was discomforting. Reporting of discomfort was not

related to the status of the DRE performer and the tolerability of DRE was neither significantly affected by the status of the performers ( $\chi^2 4.602$ ,  $P 0.504$ ) nor the BMI of the patients ( $\chi^2 4.6$ ,  $p 0.79$ ). There were only 9 cases of anal fissure. Eighty-four patients (18.7%) had anal tags, this is the most common incidental finding. Seventy-five patients (16.7%) were found to have various degrees of haemorrhoids. Ano-rectal tumor was found in 9 patients, 4 of the tumors located in the anal region and 5 in the lower rectum.

**Table 2. Group /system diagnoses of 450 patients that had DRE**

	Frequency	Percent
breast	12	2.7
thyroid	24	5.3
upper GI	75	16.7
lower GI	60	13.3
superficial tissue	9	2.0
Musculo-skeletal	30	6.7
Uro-genital	117	26.0
hernia	3	.7
others	120	26.7
Total	450	100.0

**Table 3. Incidence of changing diagnosis among Diagnosis Groups**

Diagnosis Group	Changing Diagnosis		Total
	YES	NO	
Breast	0	12	12
Thyroids	3	21	24
Upper GI	2	73	75
Lower GI	3	57	60
Superficial Tissue	0	9	9
Musculo-skeletal	3	27	30
Uro-genital	6	111	117
Hernias	3	0	3
Others	12	108	120
Total	32	418	450

$\chi^2 = 14.876$   $P = 0.062$

**Table 4. Group BMI with incidence of unrelated DRE findings**

Grouped BMI	Unrelated DRE findings		Total
	Yes	No	
Underweight	1	8	9(2%)
Normal weight	36 (14.8%)	207	243(54%)
Overweight	21(13.46%)	135	156 (34.7%)
Obesity	3(9.1%)	30	33(7.3%)
Morbid Obesity	0	9	9(2%)
Total	60	390	450

$\chi^2 = 1.249$   $p = 0.087$

**Table 5. Change in working diagnosis and status of DRE performer**

Change in working diagnosis	Status of dre performer		Total
	Consultants	Regiistrar	
Yes	1	32	33
No	132	285	417
	133	317	450

$\chi^2 4.927$   $P 0.026$  Likelihood ratio 7.994

These were incidental findings as they were not among the patients with lower GI symptoms. The prostate gland was found to be enlarged in 61 patients (41%) of all males, the consistency of the gland were reported as hard or nodular in 27.5% of the patients with enlarged prostate gland. Abnormal DRE findings were found to be contributory to the diagnosis

in 162 patients (36.0%). The abnormal DRE findings were not related to the provisional clinical diagnosis in 60 patients (13.3%). These abnormal findings are significant in only 24 patients (5.3% of all 450 patients).

Unrelated insignificant findings were found in 84 patients (18.7% of all. All these findings were not significantly affected by the status of the DRE performer, the sex of patient or ( $p=0.945$ ), age ( $p=0.895$ ) or the BMI ( $\chi^2 1.249$ ,  $P=0.087$ ) (Table 4). The diagnosis could have been missed if the DRE was not done in 75 patients (16.7%). DRE findings added information which modified the diagnosis in 48 patients (10.7%).

Additional diagnoses were made in 98 patients (22% of 450). Change in working Diagnosis was found in 32 patients (7.3%) of all cases. The age of the patients does not have a significant effect on the chance of a change in the working diagnosis ( $\chi^2=3.3$ ,  $P$  value- 0.648). Though the likelihood of rectal findings increases with age (likelihood ratio 9.897,  $p=0.078$ , with linear/bilinear association  $\chi^2 4.685$ ,  $p=0.030$ ). The chance of changing the working diagnosis also varies among the diagnosis group, though this is not significant, (Table 3). The chance of changing the working diagnosis is significantly affected by the status of the DRE performer ( $\chi^2 4.927$ ,  $p=0.026$ ), (Table 5). The chance of missing the diagnosis without DRE is significantly higher in some group of patients e.g. lower GI, uro-genital and hernia compare to thyroid ( $\chi^2=61.727$ ,  $P=0.000$ ) and the incidences of significant unrelated findings varies significantly in various diagnosis groups ( $\chi^2 20.16$ ,  $p=0.008$ ).

## DISCUSSION

DRE is a universally recognized clinical examination which contributes to making correct clinical diagnosis. The role of DRE as a part of clinical examination especially for abdominal condition was traditionally considered somewhat sacred and failure to perform it was considered technically a "grievous omission". Over the years, its usefulness in certain patient subpopulation is however questioned by several authors. We have undertaken the study to determine the role of DRE in a low resource setting. The DRE findings contributed to provisional diagnosis in 36% of patients in this study. In 13.6% of the patients, the DRE findings were not related to the working diagnosis and close to 50% of the unrelated findings were very significant that required further investigation and treatment separate from their original clinical presentation and diagnosis. An example is one of the 9 patients in whom incidental findings of Manchester stage II breast cancer that was found to have a concurrent malignant rectal polyp. These are the kinds of cases that sustain the significance of DRE and continue to remind us of essence of routine DRE.

By far the most common DRE findings are benign conditions like haemorrhoids, chronic anal fissure, anal tags, polyps this has been replicated in this study. Many of these findings do not require further treatment but may reaffirm the clinical diagnosis and exclude more sinister conditions. Although some authors have noted that DRE may not be effective in diagnosis of early prostate cancer and for reducing mortality from colorectal carcinoma (Shroder *et al.*, 1998 and Lisa *et al.*,

1995). Finding nine unsuspected cases of ano-rectal malignancies after a cheap and relatively painless clinical examination in less than 500 patients in a relatively poor society where there is also poor culture of screening for any disease would be considered beneficial and performing DRE should be considered as an opportunity to screen the patients who have presented in the hospital for other "more pressing conditions" after due counseling and consent. Up to 41% of all males irrespective of age were found to have enlarged prostate, this is not surprising in view of the fact that the mean age of the study group was 52.6 years and also up to 30% were urology patients. Above ¼ was found to be hard and or nodular, good percentage of these are likely to be malignant.

It is known that DRE is not valuable in the early detection of prostate cancer because it is not as sensitive as PSA estimation for screening purpose (Shroder *et al.*, 1998), but in a low-resource setting with poor health care availability and affordability, performing a DRE regularly on clinic attendance for males above 50 years will help in picking benign and malignant prostate early even before they become symptomatic. The patients sex and age were found not to significantly affect the incidence of findings unrelated to working diagnosis, but the real diagnosis would have been missed in up to 16.7% of patients both male and females if not for a DRE. This is rather high and found more in those with lower gastrointestinal, urogenital and hernia compared to thyroid confirming further the need for routine performance of DRE on all elective surgical patients. The need to change the working diagnosis at the end of DRE occur in 7.3% of patients, though appears low but very paramount in the individual patient, as these patients couldn't have been treated correctly. The likelihood ratio of this increasing with age was found to be high since the incidences of anorectal, prostate and bladder lesions are expected to be higher in the middle aged and the elderly. Also inguinal hernias may be a symptomatology of benign prostatic enlargement in the middle aged and the elderly while it may just be associated with excessive manual activities in the younger age group. Although in this study there was no relationship between the status of the performer and the DRE findings, previous studies have noted that the performance of DRE is directly related to the experience of the DRE performer (Wrong and Drossman, 2012 and Popadiuk Cahy, 2002) which is in turn found to affect the chance of changing the working diagnosis.

In view of this it is advisable that exposure to performing DRE should be encouraged early in medical career so that the trainee gathers adequate level of experience early in their training to begin to do better in marrying the symptoms, rectal and other clinical findings together for the purpose of increasing their DRE yield and diagnostic acumen (Campbell and Shaughnessy, 1999). About 45% of members of this study group are at least over-weight, this is supported by the work of Ijezie C. (Innocent Ijeziechkwuonye, 2013). Up to ¾ of patients with breast diseases are in this group, this may be supporting the fact that high BMI could be a predisposing factor to breast diseases including breast cancer, colorectal diseases among others (Dr Andrew G. Renehan, 2008). Our gradual changing to Western life styles especially the feeding style could have contributed to this. It should be noted that we didn't find the BMI to contribute to the incidence of

haemorrhoids. It does not affect the incidence of unrelated DRE findings. In this study DRE was found to be highly tolerated, as against the general thought that our patients may resist or not be cooperative. We routinely use the K-Y gel as lubricant for this purpose, there may be a need to assess if tolerability may be improved with the use of xylocaine gel. It was noticed that the status of the performer did not affect the tolerability; most of the performers are at least two or three years in to the surgical residency training scheme thus have gained a lot of exposure on DRE.

### Conclusion

In our study, we found the DRE a simple examination added clinical information which modified and even changed the working diagnosis in some percentage of patients, diagnosis could have been missed even in some. It is particularly of value where people only attend hospital sparingly because of high level of poverty and ignorance. The medical schools are advised to continue teaching and training the students and residents this old art. It serves as a useful adjunct to other diagnostic procedures available in low-resource setting.

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