

# Overdiagnosis: harming people in the name of health

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## Abstract

As medical technological advances continue to become more readily available, diagnosis of pseudo-disease has hit the heart of medicine and has become one of the most harmful activities in modern medicine, both individually and collectively speaking as it threatens the sustainability of health systems. Here we describe a hypothetical case (but based on many similar real ones) of a young adult woman in her middle 30's that has been diagnosed with a papillary thyroid cancer after she had been submitted to an enormous, excessive and unnecessary check-up elicited by a gynaecologist.

**Keywords:** overdiagnosis; pseudo-disease; medicalization; screening; medical overuse

## Short Communication

An asymptomatic, healthy 36-year-old woman attended a routine consultation with a gynaecologist. Even though she was a healthy, asymptomatic young woman, the doctor ordered a quite big list of tests, including pelvic transvaginal ultrasound, mammography, breast ultrasound, thyroid ultrasound, abdominal ultrasound, bone densitometry, pap smear, complete blood count, thyroid hormones and autoantibodies, biochemistry panel, vitamin D, vitamin B12, folic acid, uric acid, fasting glucose, and glycated haemoglobin. Her pelvic transvaginal ultrasound showed a small ovarian cyst; breast ultrasound showed a small nodule compatible with benign breast disease; abdominal ultrasound showed a small cystic nodulation in the right kidney, and two images suggestive of gallbladder stones; bone densitometry was compatible with osteopenia; blood tests were normal except for low vitamin D, and a TSH of 6.8 U/dL (0.9 – 4.6 U/dL) with normal free T4. Lastly her thyroid ultrasound showed a solid 1.2 cm nodule in the right thyroid lobe. The woman was fearful with all abnormal findings in her tests. The gynaecologist tranquilized her and said that all these abnormalities were not alarming (they should be annually followed), except for the thyroid nodule. A diagnostic procedure was done which showed a papillary carcinoma. A thyroidectomy was performed, and the patient had transitory post-operative hypoparathyroidism with symptomatic hypocalcemia. She was discharged taking 100 mcg of levothyroxine daily.

This young woman is an everyday practice example of medicalization and overdiagnosis [1-6]. She was submitted to a huge number of unnecessary tests as part of a routine medical examination. None of the tests she underwent (except for the pap smear) had a formal indication based on the best available evidence [7]. Unfortunately, contemporary medical practice is based on overuse of medical tests

(particularly, but not only, in preventive consultations). This case report aims at bringing the subject to discussion. Reviews of the drivers and causes of overuse, medicalization and overdiagnosis as well as the difficulties in estimating and communicating overdiagnosis are available elsewhere [2- 4, 8-12].

## Discussion

Overdiagnosis has been defined as a condition that would have never been known or never caused harm to the patient had it not been found. Put it in a different way: it is the diagnosis of a "disease" that will never cause symptoms or death during a patient's lifetime [2-5]. It is a "disease" by its current pathophysiological definition, but it is not destined to be clinically apparent and, therefore, not cause any symptoms or harm. It is a pseudo-disease, a condition whose diagnosis can only cause harm. It turns people into patients unnecessarily, producing anxiety and other negative consequences of labelling; it also results in wasted resources and side effects because of a cascade of further confirmatory testing and overtreatment [10, 11]. Overdiagnosis is different from a false positive test result, and most frequently occurs in the context of screening asymptomatic people, but it can also occur in symptomatic people either because of overmedicalization of ordinary life experiences (disease mongering) or because of incidental findings during an investigation of some other health condition. Another way of understanding overdiagnosis is to consider it an "unwarranted diagnosis" or "unwarrantedly giving a person the label of a disease" [11].

Who is to blame for the existence of such a condition? We could name quite a few: advances in biomedical technologies, ever more sensitive tests and images, expensive screening programs, the culture of excessive and unnecessary testing, and the definition of disease itself. Broader concepts such as medicalization are related to overdiagnosis (both expand

the extension of the concept of disease) but differ in many aspects. Other concepts such as overuse, disease mongering, overtesting, overtreatment, and “too much medicine” [13] could be mistaken from overdiagnosis but are separate concepts with some overlap. Treatment of an overdiagnosed condition is a type of overtreatment; overuse or overutilization (practice in health services that do not provide net benefit to people) do not necessarily lead to overdiagnosis but increases the risk of overdiagnosis and overtreatment [10, 11, 14].

## Conclusion

Overdiagnosis is one of the many faces of medicalization of society. It is intrinsically related to preventive medical activities, particularly the ones involved in early detection screening (the so-called secondary prevention). We know that when one tries to diagnose a disease early in its course, the incidence of this disease increases (and many more people will have to be treated), there will be hardly any effect on the specific mortality of this disease, and no effect, whatsoever, on total mortality. What happens most of the time is diagnosis of a condition that would never bother the patient had it not been found by screening, but its diagnosis will only bring harm in the form of unnecessary treatments, labelling, psychological distress, and waste of time and money. Moreover, the diagnosis of this type of condition (overdiagnosis) will perpetuate the activities that led to them in the first place, as the prognosis of people detected with overdiagnosis is, by definition, excellent (lead-time bias and length time bias) which brings a sense of effectiveness and necessity.

We urge doctors that care with the wellbeing of their patients, believe that health equity should be an ethical imperative and are worried with the sustainability of universal healthcare systems to be aware of this entity and make all efforts to avoid it. There is also urgent need to reconnect diagnosis with patient suffering [12], and to reform disease definitions [14]. One possible action to minimize important aspects of overuse, overdiagnosis, and overtreatment is to focus on the care of sick people and leave the healthy alone [15]. Preventive strategies should be preferentially dealt with population strategies (that are mostly outside the health system) rather than with pseudo-high risk strategies [16].

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