

MERGING OF MARKETING AND MEDICAL SCIENCE

Researching his latest book, **Ray Moynihan** uncovered how drug companies helped construct the scientific building blocks of a new condition, female sexual dysfunction. Here he asks whether we need a fresh approach to defining disease

In an article in the *BMJ* almost 10 years ago I described the making of female sexual dysfunction as the freshest, clearest example of the “corporate sponsored creation of a disease.”¹ Looking back over the past decade, it has become clear that drug companies have not simply sponsored the science of this new condition; on occasions they have helped to construct it. Corporate employees have worked with paid key opinion leaders to help develop the disease entity; they have run prevalence surveys to portray it as widespread; and they helped create the measurement and diagnostic instruments to persuade women that their sexual difficulties deserve a medical label and treatment. Drug marketing is merging with medical science in a fascinating and frightening way, raising questions about whether a new approach to defining diseases is warranted.

Expediting the development of a disease

Many of the important scientific gatherings at which this controversial condition has been discussed and debated have been sponsored by drug companies, and in many cases their representatives have taken an active role.¹ “During the process of defining the disease,” said Darby Stephens, a former research manager at the drug company Vivus, “we’ve been able to get thought leaders involved in female sexual dysfunction, and really work closely with them to develop this disease entity, so that it makes sense.”² As sales of sildenafil for men began

booming in the early 2000s, companies like Vivus, which was testing a genital cream for women, were keen to pin down erectile dysfunction’s elusive sister condition. “We’re hoping to be able to expedite the process of drug development and of disease development,” said Ms Stephens during a candid interview for a film documentary.³

There is no dispute that for some women with debilitating sexual difficulties a medical explanation and safe, meaningfully effective treatments may be valuable, including a drug should one be developed. But the drug industry has helped promote a narrow focus on trying to measure and treat the abnormal functioning of individual women and produce evidence that these “dysfunctions” are widespread, rather than an approach that addresses sexual problems in the much broader context of relationships, cultures, religions, and personal and collective histories.^{4 5}

And as each successive company touts its solution, the purported causes of the problem

are portrayed differently. When drugs affecting blood flow were looking like a winner, the notion that some women had an “insufficiency” of vaginal engorgement had scientific currency. When testosterone was proposed, the condition was a probable hormone “deficiency.” And now, as drugs affecting neurotransmitters step up for assessment, we are informed that low libido is mainly due to a chemical problem inside a woman’s brain.

Constructing prevalence

Whatever the true nature of this “condition,” its prevalence is apparently at epidemic proportions. Infamously, an academic paper published in 1999 claimed that 43% of women had sexual dysfunction, although the figure has been widely discredited and even the lead researcher says it was never intended to represent the number of women with a treatable medical condition.² Although two of the authors of that 1999 paper disclosed financial ties to industry, their survey was not funded by it. Yet over the next 10 years drug companies would not only sponsor key surveys of sexual problems, their staff would sometimes even help to run them.

In 2005 a survey of almost 30 000 people uncovered apparently high rates of sexual difficulties worldwide: a third of women in southern Europe were said to lack interest in sex; 40% in South East Asia failed to reach orgasm.⁶ Pfizer funded the survey, a Pfizer employee was a key member of the research team, and according to the lead investigator, University of Chicago professor Ed Laumann, the company had also orchestrated the survey.² “It was a marketing effort,” he said bluntly, to help Pfizer “gauge the scale of interest” in different countries. As the fine detail of the results show, the headline findings are simply grand totals, and when you look at the proportions of women experiencing these sexual difficulties “frequently,” the numbers collapse.

In 2006, when the household products giant Procter and Gamble was promoting its testosterone patch to postmenopausal women with low libido, a study emerged claiming 1 in 10 postmenopausal women had “hypoactive sexual desire disorder.”⁷ The company sponsored the survey, and most of the authors were company employees. By 2008, the German drug company Boehringer Ingelheim was preparing the global market for the launch of its failed antidepressant flibanserin as the latest aphrodisiac. The





An advisory committee to the FDA rejected flibanserin for the disorder of low libido in June for failing to measure up to pre-agreed benefits



Studies show that Pfizer's sildenafil made virtually no difference in women with low libido



Procter and Gamble promoted its testosterone patch to postmenopausal women with low libido



German drug company Boehringer Ingelheim has been promoting its failed antidepressant flibanserin as the latest aphrodisiac

scientific evidence used to support its promotional claims that 1 in 10 women had a disorder of low desire came from a study it directly funded.⁸ All five researchers who wrote up the results disclosed financial ties to Boehringer; one was a company employee, and the lead author a company consultant. The assertions that tens of millions of women had this condition and that there was a massive “unmet need” for treatment was based largely on the answer to a single survey question about whether a woman felt the desire to engage in sexual activity.

Around the same time scientific studies conducted without industry funding were coming to different conclusions, questioning, for example, whether a widespread disorder of low desire really existed. One survey in the United Kingdom of over 10 000 people found that although sexual problems were common, persistent problems lasting longer than six months were much less prevalent, and the authors questioned whether a lack of interest should be considered a dysfunction.⁹ A second study that interviewed over 1000 women found that unlike problems including sexual pain, lacking interest in sex was not something women regarded as a serious difficulty.¹⁰ Researchers concluded that reduced desire may be a normal adaptation to stress or relationship difficulties and did not generally require a medical solution. One of the study investigators, Michael King, a professor at University College London, says that although collaborations with drug companies are needed to test drugs, he worries when researchers team up with companies to produce prevalence surveys or diagnostic tools because there is a danger the science and the marketing could get mixed up.²

Industry helps design diagnostic tools

The next big scientific building block in the construction of female sexual dysfunction comprises the toolkit to diagnose the condition and measure the effects of potential treatments.

Again, successive companies have helped create the tools to measure their product’s effectiveness, with the encouragement of the US Food and Drug Administration. The 19 item female sexual function index, published in 2000, was supported by Bayer and Zonagen at a time they hoped to treat so called arousal disorder.¹¹ The sexual function questionnaire was funded by Pfizer, and half of the authors on the 2002 paper describing its development were Pfizer employees, including the lead author.¹² In 2004 Procter and Gamble helped to bring us the profile of female sexual function,¹³ which was used in clinical trials of its testosterone patch to show minor improvements against placebo—statistically significant but of questionable clinical meaningfulness.¹⁴ And, most recently, in 2009 Boehringer Ingelheim announced the decreased sexual desire screener.¹⁵

Unlike other questionnaires developed primarily for use in clinical trials, the decreased sexual desire screener was promoted as a “new, easy to use” diagnostic tool to assess women for “hypoactive sexual desire disorder”—the target condition for Boehringer’s forthcoming drug. According to the company’s press release, the tool “enables clinicians who are not necessarily experts in female sexual dysfunction to diagnose the condition with high accuracy in a few minutes.”¹⁵ Two of the six researchers who helped create and validate the tool were Boehringer employees; all the others had financial ties to the company, the lead investigator disclosed ties to more than 10 companies, and the editor in chief of the journal that published the article validating the tool disclosed at the time that he had a contract with Boehringer.¹⁶ According to Lori Brotto, a Canadian psychologist attached to the University of British Columbia,

spending only “a few minutes” on diagnosis could result in oversimplifying complex sexual problems and giving women a label that may not be warranted.

Raising awareness of “unmet need”

Industry is also taking a leading role in “educating” both professionals and the public about this controversial condition. During research for my book *Sex, Lies and Pharmaceuticals* I discovered that a Pfizer funded half day “continuing medical education” course was offered to hospitals across the United States. It claimed that up to 63% of women had sexual dysfunction and that testosterone and sildenafil may be helpful, along with behavioural therapy. Procter and Gamble also funded a course, delivered by company linked opinion leaders, that had the explicit objective that attending doctors should know the “rationale for testosterone use” in women with hypoactive sexual desire disorder. Later, Boehringer co-sponsored a website called Female Sexual Dysfunction Online, where

“The assertion that tens of millions of women had this condition was based largely on an answer to a single survey question”

80% of the educators disclosed ties to drug companies, including the professor who peer reviewed the site.

Pfizer declined a request to be interviewed about female sexual dysfunction, but in a written

statement explained it had “conducted a number of studies over the past 15 years designed to understand the causes and nature of FSD [female sexual dysfunction] and its impact on women.” In relation to its financial ties with doctors and others, Pfizer stated that it works with professional and patient organisations, to help efforts that “strengthen communities and work towards a healthier world.” Both Boehringer and Procter and Gamble, which sold its drug business in 2009, declined to be interviewed for my book.

“Although the drugs have so far failed, the edifice of scientific evidence about the condition remains in place”

As the planned 2010 launch of its desire drug, flibanserin, approached, Boehringer’s “educational” activities went into overdrive. It hired multiple public relations firms worldwide to try to shape public debate, it hosted closed door meetings with paid experts, it helped fund a documentary about desire, and it sponsored a high profile new website called *SexBrainBody*, widely promoted in the US media in the weeks leading up to a June meeting of the FDA to assess flibanserin as a treatment for low desire. The media campaign starred a former Playboy model turned television celebrity and emphasised that millions of women were suffering in silence with a disorder of low desire that was largely due to problems with their brains. In May this year a television programme featured a company linked expert saying sexuality is “more about the brain” than anything else, another segment had a researcher explaining that 1 in 10 women had “hypoactive sexual desire disorder,” while a third expert claimed the desire disorder “affects about 30% of women.”

Ultimately, at the public hearing in June, the advisers to the FDA rejected flibanserin, which failed to measure up to pre-agreed benefits while carrying the risk of serious adverse events.¹⁷ Two months later the FDA sent Boehringer a “complete response letter,” and the company told the *BMJ* it cannot comment on the future of flibanserin until it has undertaken a “detailed evaluation” of that letter. Procter and Gamble’s testosterone patch was rejected in 2004 in the United States, largely over fears of long terms risks of cancer and heart disease.¹⁸ Although the patch was subsequently approved in Europe, independent assessment agencies have recommended against its use because of questionable benefits compared with placebo and serious risks.² Pfizer’s sildenafil was also

pulled from the race after studies showed virtually no difference from placebo.

Although the drugs have so far failed, the edifice of scientific evidence about the condition remains in place—constructed with corporate money and often with help from company staff—creating the impression, reinforced constantly in promotional materials, that there is a massive “unmet need” for treatment. The same advisers who in June this year rejected flibanserin for the disorder of low libido were supportive of more work to tackle what they described as this “health issue.” With more experimental drugs in the pipeline, the drug industry shows no signs of abandoning plans to meet the unmet need it has helped to manufacture. Indeed, at a drug company funded conference in Paris last year, high profile researchers with financial ties to industry announced proposals to change fundamentally the way drugs for female sexual dysfunction are tested, which would make it easier for pills and patches to show benefits against placebos.²

New ways to define disease?

Rather than national public health priorities being distorted by perceptions of unmet need promoted by well paid celebrities, perhaps it’s time to reassess the way in which the medical establishment defines common conditions and recommends how to treat them. Out in the medical marketplace life’s ups and downs are being transformed into blockbuster conditions such as sexual dysfunction, overactive bladder, and adult attention deficit disorder, while minor increases in the risk of future illness are portrayed as an ever increasing range of pre-conditions, including prehypertension, prediabetes, and pre-osteoporosis. The pattern is clear: opinion leaders linked to companies selling solutions meet to revise and refine the definitions of conditions for which the latest treatments are then aggressively promoted, and, inexorably the boundaries of potentially treatable illness are widened.

The making of female sexual dysfunction has attracted so much public scrutiny, in large part because of the work of *New View*, a global network including academics, clinicians, and feminists that since 2000 has been exposing industry’s role and offering an alternative, broader understanding of sexual difficulties.⁵ The group has helped enhance the scepticism of media coverage, informed a wider public debate about the uncertainty surrounding this condition, and also influenced

developments within the small circles of sex research. The current proposals for a revision of the definitions of female sexual dysfunction put more emphasis on relationships, raise the threshold for diagnosis, lower the estimates of prevalence, and abandon the entity currently known as “hypoactive sexual desire disorder.”¹⁹

What we have here is a case study of civil society responding to the merging of marketing and medical science, provoking the need for a wider debate about reform of the way human disease is defined, developed, and promoted to the public. How many of the thresholds for the prescription of powerful drugs have been lowered to such an extent that we are inadvertently doing more harm than good? What is the global opportunity cost of medicalising and medicating tens of millions of wealthy healthy people with minor ailments or low risks of distant illness? Shirley Boles, the Florida woman recently awarded a large payout by a New York court because she developed osteonecrosis of the jaw after taking alendronate for many years, was originally diagnosed with only pre-osteoporosis—the “condition” of being at risk of being at risk of future fracture, which some estimates claim affects half of all postmenopausal women.

As leading bodies like the US Institute of Medicine call for much greater independence between the industry and the profession,²⁰ perhaps it is time to develop new panels to take responsibility for defining treatable illness, made up of people without financial ties to those with vested interests in the outcomes of their deliberations and much more broadly representative of the wider public. The move towards evidence informed health care has enhanced the scientific evaluation of the risks and benefits of interventions. Perhaps it is time to apply a similar rigour to the claims about the nature and extent of the conditions those interventions are targeting and start the slow process of untangling the marketing from the medical science.

Ray Moynihan conjoint lecturer, University of Newcastle, Newcastle, Australia
www.raymoynihan.net

This article is based substantially on research for the book *Sex, Lies and Pharmaceuticals*, cowritten with Barbara Mintzes.

Competing interests: The author has completed the unified competing interest form at www.icmje.org/coi_disclosure.pdf (available on request to him) and declares no support from any organisation for the submitted work; RM received a publishing advance to write *Sex, Lies and Pharmaceuticals*, and he teaches and lectures on the public health problem of disease mongering at universities and conferences around the world.

Provenance and peer review: Commissioned; not externally peer reviewed.

References are available on bmj.com

Cite this as: *BMJ* 2010;341:c5050



COMMENTARY **Sandy Goldbeck-Wood**

Female sexual dysfunction is a real but complex problem

When the desire for sex goes persistently missing, a few women may be untroubled but many become unhappy. Some are unhappy because they miss the pleasure, physical release, and emotional intimacy that sex can provide or because a lack of sex stands in the way of having children. Sometimes their unhappiness is social or relational: because they fear hurting, rejecting, frustrating, angering, and perhaps even losing their partner. Many endure sexual unhappiness for long periods alone, feeling too embarrassed, ashamed, unentitled, mistrustful, or hopeless to ask for help. It is difficult to speak to a strange doctor about such private distress; more difficult still given that many fear embarrassing their doctor.^{1 2}

So women who consult doctors about sexual problems are those for whom the unhappiness has become so intractable, or is causing so many physical or relational problems, that they are forced into the open. Some present a sexual problem directly, others indirectly through secondary symptoms such as depression, recurrent vaginal discharge, or chronic pelvic pain.³

Faced with a woman in tears whose libido has disappeared and who is terrified of losing her partner, doctors can feel immense pressure to provide an immediate, effective solution. Given that most doctors understand more about biological illnesses and treatments than other possible causes of sexual difficulty and that most medical research is biological in focus, it is not surprising that we often reach first for oestrogen creams, testosterone patches, phosphodiesterase 5 inhibitors, antidepressants, or dilators—anything halfway plausible to defend us from the naked embarrassment of our therapeutic impotence. It is easy to see how the pressure for immediate solutions, combined with our biological bias and offers of research funding, leads to the kind of collaboration with the drug industry that has worked well for other illnesses, despite its relative inefficacy in this area.

Moynihan's research points to an improperly intimate research relationship between industry and clinicians, distorting the research agenda and casting doubt over even the most basic prevalence

data.^{4 5} His research clarifies, helpfully, both the conflicts of interest at work and the relative paucity of good quality evidence for pharmacological solutions to women's sexual problems. However, his argument that female sexual dysfunction is an illness constructed by pathologising doctors under the influence of drug companies will fail to convince clinicians who see women with sexual dysfunction, or their patients. Women who have struggled to overcome the psychological and cultural barriers to requesting help with their sexual difficulties will not welcome the argument that they are to be "left alone"; patronising normalisation will serve them no better than ineffective medication.



"Faced with a woman in tears whose libido has disappeared and who is terrified of losing her partner, doctors can feel immense pressure to provide an immediate, effective solution"

Multidimensional solutions

The problem is one of oversimplification. Sex is, par excellence, a biopsychosocial experience, and attempts to split these elements, however intellectually or politically convenient, are doomed to fail. Many factors can contribute to low libido, few of them treatable with drugs. Traumatic experiences, physical or mental illness,

unexpressed feelings within a relationship, pressure to conform to religious or media ideals of womanhood, or general unhappiness in wider life can all disturb a woman's relationship with her partner, or with her own body. It is welcome, therefore, that the Diagnostic and Statistical Manual of Mental Disorders is revising its definitions of female sexual dysfunction to reflect contextual factors,⁴ and unsurprising that the best available evidence (levels 3, 4, and 5) supports the use of a multidisciplinary or biopsychosocial approach to treatment.⁶

The methodological challenges to such research are considerable. Experts from disparate disciplines such as gynaecology, psychotherapy, sociology, or psychiatry are divided by history, culture, language and research methodology, and sometimes by mutual suspicion and competition.⁷ Outcome studies are notoriously difficult to design and conduct in ways that meet high evidence standards while respecting the complexity of sexual life.^{8 9} Many studies have focused narrowly on genital function or performance, for example, and overemphasised frequency of various sexual acts, neglecting more subtle measures

of satisfaction or health related quality of life. Even defining a good treatment outcome can be challenging. More studies of interdisciplinary approaches are needed, using methods that allow subjective, lived experience to be studied, rather than dismissed as a contaminant.¹⁰

Moynihan points away from overinvestment in pharmaceutical solutions that ignore both aetiology and evidence. His book points clinicians, researchers, and funding bodies towards the most realistic treatments using the most appropriate methods—those which respect the biopsychosocial complexity of the problem.¹¹ We owe these women something more respectful than ineffective medication or patronising false reassurance. At the least, this may be an honest acknowledgment of our, and medicine's, limitations to deal with a real problem. At best, we can offer them the interdisciplinary treatments most likely to help. This means leaving the comfort zones of biology, medication, and familiar research methodologies, and designing studies which reflect the complexity of sexual life, and respect lived experience.

Sandy Goldbeck-Wood associate specialist in psychosexual medicine, speciality doctor in obstetrics and gynaecology goldbeckwood@doctors.org.uk

Competing interests: The author has completed the unified competing interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declares no support from any organisation for the submitted work; no financial relationships with any organisation that might have an interest in the submitted work in the previous three years. She works as a specialist doctor in psychosexual medicine, within the NHS and with a small private practice. She is a member of the Institute of Psychosexual Medicine (IPM), a trainer for the IPM, and edits the IPM's journal, *IPMJ*. She also has training in psychotherapy, and a longstanding interest in psychosomatic aspects of sexual and reproductive health.

References are available on bmj.com

Cite this as: *BMJ* 2010;341:c5336

Where to go for information on better help

- Institute of Psychosexual Medicine (www.ipm.org.uk)—Provides training in psychosexual medicine for doctors in the UK
- British Association of Sexual and Relationship Therapy (www.basrt.org.uk)—A specialist charity that provides information on sexual problems, access to psychosexual therapists, and useful resource links
- British Association for Behavioural and Cognitive Psychotherapies (www.babcp.com)—Information on training, accreditation, supervision, and access to cognitive behavioural therapists in the UK, with links to similar organisations in other countries
- British Society for Sexual Medicine (www.bssm.org.uk)—Promotes research and education on sexual dysfunction. Membership allows access to peer reviewed publications