

Review Article**Conjunctivitis: Types, diagnosis and treatment under different therapies**

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Abstract

The marketing environment is changing at an accelerating rate and the patient's preference towards the therapies also don't remain unaffected by the changes in market. Now-days Allopathy is most widely preferred to other therapies including Homeopathy and Ayurveda. Although other therapies are equally effective promising and effective as the Allopathy, also they are safer with no side-effects. So, I decided to reach out for the reasons and to understand why patients opt for Allopathy, all the while ignoring the traditional indigenous therapies that are not inferior in any aspect to the western system of medication. In this review we tried to give a deep inside as to why other therapies are usually referred the disease conjunctivitis as an objective for market. During survey of the study also reveals that treatments are given under different therapies in the diseases conjunctivitis. This review may help the patients and the researchers in general to make out by themselves the most effective system of medication.

Keywords: Conjunctivitis, diagnosis, allergies, bacterial infections

Introduction

Conjunctivitis, more commonly known as pinkeye, is an inflammation of the conjunctiva, a clear membrane that covers the outermost layer of the eye and the inner surface of the eyelids (Richards, 2010). As with many of the more common eye inflammations, conjunctivitis usually looks and feels worse than it is and while the pronounced redness can be quite alarming at first glance, conjunctivitis very rarely causes long term visual damage.

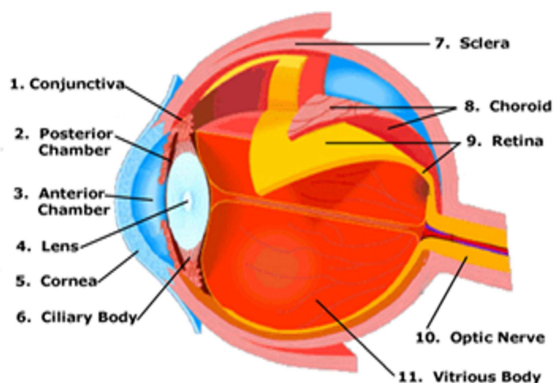


Figure 1. Different components of Eye

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Types of Conjunctivitis**Allergic Conjunctivitis**

It is commonly occurs in people who suffer from an allergic condition, allergic conjunctivitis can be caused by a number of substances particular to the individual. This type of conjunctivitis often has a seasonal element and occurs more frequently during spring and seasonal changes. Other common allergens are dust, pollen, cosmetics, perfume, or medication and allergic symptoms of pink eye often affect both eyes, and severe itchiness swelling are common (Baran, 2014; Shang, 2005).



Figure 2. Allergic Conjunctivitis

Viral Conjunctivitis

As the name suggests, viral conjunctivitis is caused by a

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virus, either contracted through the air or direct contact. Viruses that cause the common cold, acute respiratory infections, or disease such as measles or herpes are often the causes of viral conjunctivitis. A herpes infection is actually quite common, especially the herpes simplex virus, which causes cold sores on the lips and mouth area. Exposure to sun and high fevers are triggers for causing these cold sores (Baran, 2014, Shang, 2005).

For this reason, it is fairly common to notice other symptoms, such as body aches and upper respiratory symptoms, with this type of conjunctivitis, and it is fairly contagious.



Figure 3. Viral conjunctivitis

Bacterial Conjunctivitis

Bacteria such as Staphylococcus, Streptococcus, and Haemophilus are the common culprits that cause this type of conjunctivitis which is highly contagious and easily spread, especially amongst children (Baran, 2014, Shang, 2005).



Figure 4. Bacterial Conjunctivitis

Irritant and Chemical Conjunctivitis

Certain irritants to the eye such as flame burns, some plant saps, irritant gases or chemicals, and environmental toxins can all cause irritant conjunctivitis.

Symptoms

Pinkeye is caused by infections (from bacteria or viruses), allergies, or certain irritants that come into contact with the eye, thus the different types of conjunctivitis tend to cause different



Figure 5. Irritant and Chemical Conjunctivitis

symptoms. Symptoms of pink eye may include (Whorton, 2004; Philip, 2001).

- ✍ Tenderness of the eye, or pain (which can be severe in the cases of irritant conjunctivitis)
- ✍ Itchiness
- ✍ Body aches
- ✍ Sensitivity to light
- ✍ Discomfort in the eye
- ✍ Redness of the eye or inner eyelids
- ✍ Discharge and teariness
- ✍ Discharge may cause eyelids to crust and stick together while sleeping
- ✍ Swelling of the eyelids
- ✍ Infection usually begins with one eye, but can quickly spread to other eye in cases of viral or bacterial conjunctivitis
- ✍ In most cases of pinkeye, pain, photophobia and blurred vision are not very common and should they occur it is important to seek medical attention to rule out other diseases such as glaucoma, uveitis, keratitis or even meningitis (Baran, 2014; Shang, 2005).

Diagnosis

Cultures are taken infrequently, because most cases of conjunctivitis are treated empirically and (eventually) successfully, but often only after running the gamut of the common possibilities. Swabs for bacterial culture are necessary if the history and signs suggest bacterial conjunctivitis, but there is no response to topical antibiotics. Viral culture may be appropriate in epidemic case clusters.

A patch test is used to identify the causative allergen in the case where conjunctivitis is caused by allergy.

Conjunctiva scrapes for cytology can be useful in detecting chlamydial and fungal infections, allergy, and dysplasia,

but are rarely done because of the cost and the general lack of laboratory staff experienced in handling ocular specimens. Conjunctival incisional biopsy is occasionally done when granulomatous diseases (e.g., sarcoidosis) or dysplasia are suspected (Mark, 1996). The cellular response in conjunctivitis differs according to the cause, as follows:

- Bacterial infections: Neutrophils predominate
- Viral infections: Lymphocytes predominate
- Allergic reactions: Eosinophils predominate

Differential Diagnosis

- Conjunctivitis causes relatively nonspecific symptoms (Whorton, 2004). Even after bio microscopy, laboratory tests are often necessary if proof of etiology is needed.
- A purulent discharge (a whitish-yellow, yellow or yellow-brown substance, more commonly known as pus) suggests a bacterial infection. It can also be caused by bacteria from feces, pet hair, or by smoke or other fumes. Infection with *Neisseria gonorrhoeae* should be suspected if the discharge is particularly thick and copious.
- Itching (rubbing eyes) is the hallmark symptom of allergic conjunctivitis. Other symptoms include history of eczema, or asthma.
- A diffuse, less "injected" conjunctivitis (looking pink rather than red) suggests a viral cause, especially if numerous follicles are present on the lower tarsal conjunctiva on bio microscopy.
- Scarring of the tarsal conjunctiva suggests trachoma, especially if seen in endemic areas, if the scarring is linear (Arlt's line), or if there is also corneal vascularization.
- Clinical tests for lagophthalmos, dry eye (Schirmer test) and unstable tear film may help distinguish the various types of conjunctivitis.
- Other symptoms, including pain, blurring of vision and photophobia, should not be prominent in conjunctivitis. Fluctuating blurring is common, due to tearing and mucoid discharge. Mild photophobia is common. However, if any of these symptoms are prominent, it is important to consider other diseases such as glaucoma, uveitis, keratitis and even meningitis or carotico-cavernous fistula.
- Many people with conjunctivitis have trouble opening their eyes in the morning because of the dried mucus on their eyelids. There is often excess mucus over the eye after sleeping for an extended period (Mark, 1996).

Epidemiology

Allergies are thought to affect about 20% of the population and, of these, about 20% of individuals experience eye problems.

- Over 50% of patients who seek treatment for allergies present with ocular symptoms. Allergic Conjunctivitis is the cause of around 15% of all eye problems presenting in general practice.
- Seasonal allergic conjunctivitis and perennial allergic conjunctivitis are often associated with a family history of atopy (asthma, eczema or rhinitis).

Vernal kerato conjunctivitis occurs mainly in hot climates and presents more often in young males.

Investigations

The diagnosis is usually made on history and eye examination. This should include staining the eyes, testing acuity, checking the anterior chamber for clarity (as far as possible with a handheld ophthalmoscope) and evert the lids to look for foreign bodies and examining the underside of the eyelids. Investigations and/or referral are only indicated if there is any doubt in the diagnosis. Investigations may include conjunctival swabs, skin prick testing, serum immunoglobulin E (IgE) and Radio Allergo Sorbent test (RAST).

Types of Allergic Conjunctivitis

There are six recognized types of allergic conjunctivitis: seasonal, perennial, drug-induced, contact lens-induced, vernal and atopic. The first four are caused by type 1 hypersensitivity reactions (Baran, 2014).

Conjunctivitis due to type 1 hypersensitivity reactions

Seasonal conjunctivitis: (aka conjunctivitis associated with hay fever) the most common allergen is pollen. Grass pollens peak from May to August whereas tree pollens tend to peak on either side of this period, depending on the tree species involved. Individual patients may have multiple allergies, but their symptoms tend to recur at the same time each year.

Perennial conjunctivitis: It is the conjunctivitis where symptoms occur throughout the year in response to various allergens such as animal dander and house dust mites. Symptoms may be worse in the mornings.

Giant papillary conjunctivitis: The common causes include contact lenses, and (broken) sutures and prostheses following eye surgery. This is the most severe form of contact lens-associated papillary conjunctivitis. It is seen in contact lens and prosthesis users. However, the widespread use of disposable contact lenses has reduced its incidence.

Contact dermatitis conjunctivitis: It arises in response to eye drops or cosmetics. It is characterized by a complete lack of response to antihistamines and mast cell stabilizers.

Vernal conjunctivitis: This is an uncommon IgE and cell-

mediated allergic condition, mainly affecting boys (usually after the age of 5) and young individuals (there is no gender bias post-puberty), living in warm conditions. It rarely persists beyond the age of 25 years. Its incidence is decreasing among the white population but increasing among Asians. It is most common in Arabs and Afro-Caribbeans. Vernal conjunctivitis may be seasonal or perennial, and is often more pronounced in the spring months. A new grading system has recently been developed to indicate the severity of this disease, ranging from 0 (absence of symptoms and no therapy) to 4 (severe disease involving the cornea and needing pulsed high-dose topical steroid).

Atopic conjunctivitis: This is a relatively rare but potentially serious condition affecting mainly young individuals (onset: age 25-30 years) suffering from atopic dermatitis. Presentation can be similar to vernal conjunctivitis but the condition persists for years and is associated with significant visual morbidity secondary to keratoconus, presenile cataract and occasionally, retinal detachment.

Conjunctivitis avoidance

First line of defense is to avoid the cause of conjunctivitis as viral and bacterial conjunctivitis spread easily others. Here are some tips to avoid spreading the conjunctivitis or re-infecting yourself.

- 1) Wash hand thoroughly before you use the medicines in your eye, after using the medicine in your eyes.
- 2) Wash any clothing touched by infected eyes
 - ✂Clothes
 - ✂Towels
 - ✂Pillow cover
- 3) Avoid shaking hands.
- 4) Do not share eye drops or cosmetics as eyeliner, eye shadow. Replace them after you healed, to avoid re-infection.
- 5) Disinfect surfaces such as doorknobs and counters with diluted bleach solution.
- 6) Do not swim (some bacteria can spread in warm water).
- 7) Wear black sunglasses, when among others.
- 8) Do not touch the infected eye because the infection will spread to the good eyes.
- 9) Repeatedly wash the eyes with clean water.
- 10) To avoid allergic conjunctivitis-
 - Keep windows in your home and car closed during the pollen season, use air conditioning instead.
 - Dust and vacuumed frequently to alleviate potential allergens at home.
 - Avoid outdoor activities such as moving the lawn or gardening,

especially in the morning and early afternoon when pollen release at its height.

11) Use cold compresses to alleviate the itching (Samuel, 1833)

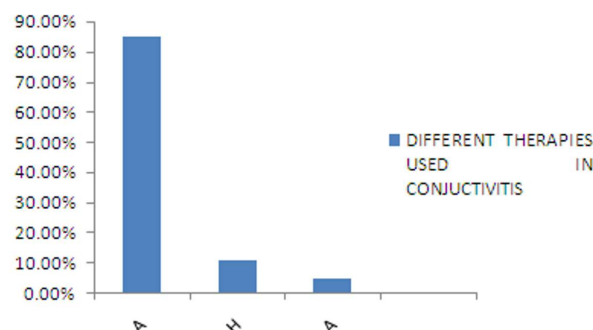


Figure 6. Different therapies used in conjunctivitis

Allopathic Therapy

Allopathic medicine is an expression commonly used by homeopaths and proponents of other forms of alternative medicine to refer to mainstream medical use of pharmacologically active agents or physical interventions to treat or suppress symptoms or pathophysiologic processes of diseases or conditions. The expression was coined in 1810 by the creator of homeopathy, (Samuel, 1755–1843; Philip, 2001). In such circles, the expression "Allopathic Medicine" is still used to refer to "the broad category of medical practice that is sometimes called Western medicine, biomedicine, evidence-based medicine, or modern medicine". It is a system of medical practice that aims to combat disease by use of remedies (as drugs or surgery) producing effects different from or incompatible with those produced by the disease being treated (Samuel, 1833).

Homeopathy Therapy

Homeopathy (also spelled homoeopathy) from the Greek *hómoios* "like- and *páthos* "suffering") is a system of alternative medicine created in 1796 by Samuel Hahnemann, based on his doctrine of like cures like, according to which a substance that causes the symptoms of a disease in healthy people will cure similar symptoms in sick people (Smith, 2012). Homeopathy is a pseudoscience and its remedies have been found to be no more effective than placebo (Baran, 2014; Shang, 2005; John, 2009; Ananda, 2003).

Ayurveda therapy

Ayurvedic medicine is a system of Hindu traditional medicine native to the Indian subcontinent and a form of alternative medicine. The oldest known ayurvedic texts are the *Súsrutha Samhitā* and the *Charaka Samhitā*. These

classical Sanskrit texts are among the foundational and formally compiled works of Ayurveda (Williams, 1899; Varsney, 2000). In classical Sanskrit literature, Ayurveda was called "the science of eight components", a classification that became canonical for Ayurveda (Tripathi, 2000).

1. General medicine – Kāya-chikitsā: "cure of diseases affecting the body"
2. Pediatrics – Kaumāra-bhṛtya: "treatment of children"
3. Surgery – Śhalya-chikitsā: "removal of any substance which has entered the body (as extraction of darts, of splinters, etc.)"
4. Ophthalmology / ENT/Dentistry – Śālākya-tantra: "cure of diseases of the teeth, eye, nose or ear etc. by sharp instruments"
5. Demonology / exorcism / psychiatry – Bhoot (ghost)-vidyā: "treatment of mental diseases"
6. Toxicology – Agada-tantra: Gada means Poison. "doctrine of antidotes"
7. Anti Agings – Rasayana-tantra: "doctrine of Rasayana"

Allopathic treatment to Conjunctivitis

Conjunctivitis requires medical attention. The appropriate treatment depends on the cause of the problem (Richards, 2010; Mark, 1996).

For the allergic type, the management of allergic conjunctivitis is aimed at preventing the release of mediators of allergy, controlling the allergic inflammatory cascade and preventing ocular surface damage secondary to the allergic response. Many patients start medicating themselves of their own accord and go for help when basic measures have failed. In milder cases, it is worth checking the following before considering drug treatment:-

Non-pharmaceutical management

- ✍ Avoiding rubbing the eyes.
- ✍ Using cool compresses, eye baths and preservative-free lubricants may be soothing.
- ✍ Avoiding wearing contact lenses/prostheses until symptoms and signs resolve.
- ✍ If lenses are essential, consider using daily disposable lenses.
- ✍ Allergen avoidance is often tricky but should be the primary aim. Consider introducing air conditioning, reducing pet contact, and bedding change.
- ✍ Artificial tears can be helpful in mild cases (they dilute the allergen).
- ✍ Contact lenses should not be worn if conjunctivitis is present or during a course of topical therapy.

Pharmaceutical management

Topical mast cell stabilizers- e. g., sodium cromoglycate: mast cell stabilizers are recommended for use throughout a period of allergen exposure. Sodium cromoglycate is usually effective but the newer agents, lodoxamide and nedocromil, may be effective in those with an inadequate response to sodium cromoglycate.

Topical antihistamines (other than in contact dermatitis which is unresponsive to these). The topical ocular antihistamines, antazoline, azelastine, and emedastine provide rapid relief of the symptoms of allergic conjunctivitis. Azelastine seems to have additional mast cell stabilizing properties. Topical antihistamines are not appropriate for prolonged use (no longer than six weeks).

Combined antihistamine/vasoconstrictor drops - eg, antazoline with xylometazoline.

Diclofenac eye drops are also licensed for seasonal allergic conjunctivitis.

Oral antihistamines such as loratadine or chlorphenamine may be used. Oral antihistamines provide relief of symptoms and are particularly useful when there is associated allergic rhinitis.

They can cause drowsiness, particularly the older compounds such as chlorphenamine, and patients need to be cautioned regarding this.

Topical corticosteroids (eg, betnesol) can be used if symptoms are very severe but there must be absolutely no doubt about the diagnosis. Remember the risks of infections, including undiagnosed corneal herpes simplex or ocular herpes zoster, and of secondary glaucoma. Topical corticosteroids should never be given for an undiagnosed red eye, when visual acuity is impaired, or if there is a history of ocular herpes simplex infection. Long-term use is avoided because this can result in cataract, glaucoma, and severe bacterial or fungal infections involving the eyelid, conjunctiva, and cornea. There may be a role for intranasal corticosteroids which have been shown to reduce ocular symptoms.

Oral steroids in a short (five-day) course may be used in severe cases where there is no doubt about the diagnosis. Ophthalmologists may use them in severe cases.

Bacterial conjunctivitis is usually treated with antibiotic eye drops or ointment that cover a broad range of bacteria. e.g. Trimethoprim with polymyxin B, Gentamicin, Tobramycin, Neomycin, Ciprofloxacin, Ofloxacin, Gatifloxacin, Erythromycin. Povidone-iodine solution 1.25% ophthalmic solution may be a safe and viable alternative to topical antibiotics for treating bacterial conjunctivitis, especially in resource-poor countries, where antibiotics may be hard to

come by and/or expensive. Like the common cold, there is no cure for viral conjunctivitis; however the symptoms can be relieved with cool compresses and artificial tears. For the worst cases, topical steroid drops may prescribe to reduce the discomfort from inflammation. Viral conjunctivitis usually resolves within 3 weeks. There are preparatory eye washes and lotions which may soothes the eyes and at least one eye treatment which is for mild infections. The doctors may prescribe drops or ointments or both. Drops stay in the eye for a shorter time but ointment tends to blur the vision. Sometimes the doctor may prescribe drops by day with ointment at night (Mark, 1996).

Homeopathic treatment to Conjunctivitis

Homeopathy offers considerable relief without side-effects of all allopathic drugs.

Treatment of allergies

By instructing the patient to avoid the allergy.

By treating the patient classically, that is matching the patient's symptoms with the drugs picture of remedy and administering the remedy in the normal way.

Treatment of Bacterial and Viral infections:

There are four ways in which homeopathy can be used in the management of bacterial and viral infections.

Prophylaxis

Treatment

Recovery From Long Standing Infections

Correction of chronic after-effects of disease

Some of the medicines used in conjunctivitis are as follows:

Apis mellifica: Puffy, pink, watery swelling that feels better from cold applications is a strong indication for this remedy. Stinging, burning pain may be experienced, and the eyelids may stick together. A person who needs this remedy often feels irritable, disliking interference.

Argentum nitricum: Swelling with yellowish or pus-like discharge, and redness and inflammation of the whites and inner corners of the eyes, suggest the use of this remedy. The person's eyes may be tired and achy, worse from light and warmth, and better from cool water, cold compresses, and fresh air. People who need this remedy often have a strong desire for both salt and sweets.

Hepar sulphuris calcareum: When the eyes feel sore or bruised, with inflammation and burning pain, or a feeling as if the eyes are being pulled back into the head, this remedy may be indicated. Yellow discharge can stick the eyelids shut, especially in the morning. Warm compresses, and warmth in general, often ease discomfort. Extreme sensitivity to cold, as well as to light and noise, is often seen. The person may be very irritable and touchy.

Mercurius solubilis: People needing this remedy often feel ill and tired, with erratic body temperature and sensitivity both to heat and cold. Discharge is greenish-yellow and can irritate the lids and margins of the eyes. A person who needs this remedy often has swollen glands, offensive breath, and excessive salivation.

Natrum muriaticum: Swollen lids with burning tears and a feeling that the eyes are bruised suggest a need for this remedy. Mucus or pus forms and can make the eyelids stick together. People who need this remedy often feel sad and tired, acting irritable if someone shows them sympathy.

Pulsatilla: Conjunctivitis with thick, yellow, itchy discharge (often accompanying a cold or the measles) suggests a need for this remedy. The person is emotional and sensitive, feeling worse from warmth and in stuffy rooms, and relieved by cool fresh air.

Sulphur: This remedy may be helpful if the eyes are very red and irritated, with burning, smarting, sticking pains and a nagging itch. The whites of the eyes look red and bloodshot, and the tears feel hot. Symptoms are worse from heat, and light will hurt the eyes. The eyelids may look contracted, especially in the morning (Varsney R.L2000), (Goodman and Gillman).

Ayurvedic treatment for Conjunctivitis

The humor responsible for vision is "pitta". When pitta is vitiated vision is weakened and also the eyes became red. Thus ayurveda believes in curing the pitta in conjunctivitis.

1. Acacia nilotica (Babul, Kikar): The leaves of babul tree are effective in the treatment of conjunctivitis. The leaves, ground to paste, should be applied on the affected eyes at night, supported by a bandage which should be untied in the next morning. This removes pain and redness.

2. Achyranthus aspera (Rough chaff, chirchita): The root of the herb is useful for eye disorders. A paste of the roots with water can be applied beneficially in the opthalamia and opacity of the cornea.

3. Berberis aristata (Indian Barberry, Rasaut): The drug is highly beneficial in the treatment of eye diseases. Mixed with milk, it can be used effectively as a lotion in conjunctivitis.

4. Cassia auriculata (Tenner'cassia, Tarwar): Finely powdered, decorticated seeds should be used as a dusting powder in the treatment of conjunctivitis. The seeds find their application in purulent opthalamia that is, inflammation of the eye or conjunctiva. They should be finely powdered and blown into the affected eyes. An ointment prepared from them and oil can be applied to the affected eye with confidence.

5. *Calendula officinalis* (Pot Marigold, Zergeel): A cold infusion of the herbs used as an eye wash, gives relief in conjunctivitis. A lotion of flowers is also a useful wash for inflamed and sore eyes.

6. *Coriandrum sativum* (Coriandrum, Dhania): A decoction prepared from freshly dried coriander is an excellent eye wash in conjunctivitis. It relieves burning sensation and reduces pain and swelling.

7. *Ervatamia coronaria* (East Indian, Rosebay): The juice or the milk from the leaves, either by themselves or mixed with charcoal of the plant, can be used with beneficial results as a soothing application in inflammation of the eye. The juice of the flower mixed with same bland oil such as refined coconut oil can be used with grafting results for sore eyes and inflammation of the cornea.

8. *Petroselinum Crispum* (Parsley, Prajmoda): Raw parsley juice, mixed with carrot juice, is effective in all ailments connected with the eyes and the optic nerves. It is good for weak eyes, ulceration of cornea, cataracts and conjunctivitis.

9. Trifala lotion is made by soaking 15 gm of Trifala churna in 200 man hour, boiling and filtering it. This is used for washing the affected eyes 3-4 times a day. Trifala churna orally about 5 gm with water is useful for viral infections.

10. The decoction of turmeric is a very cooling application in conjunctivitis; you can either wash your eyes with this decoction or apply the compress made with decoction over the eyes (Tripathi, 2000; Richards, 2010; Mark, 1996).

Conclusion

1) Allopathy has captured almost the whole market. Other therapies are left with only the small space to thrive in.

2) Every therapy has its own benefits and limitations:

Allopathy is quick in action but has various side-effects.

Homeopathy is relatively slow in action but very safe.

Ayurveda is also relatively quick and safe but nowadays it is drug have been adulterated.

3) Each therapy treat conjunctivitis in its own peculiar way.

At the present time the Allopathy is most popular in the market. The reason for its popularity is that in the present world of today the life has become so fast and tedious that only the Allopathy suits to the public. The reason being Prompt in action highly available Easy to take Continuous development. Although it matches with the current environment but it leaves its long lasting impacts in the form of critical side-effects. Also the allopathy is popular since there is not much knowledge available to patients about other therapies. In comparison to allopathy, the other therapies-Ayurveda, Homeopathy etc. are very safe and effective. Thus if the other therapies are promoted then it will be quite

beneficial to the health of the public.

Conflicts of interest: Nil

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