

## FEATURE

## CHRISTMAS 2008: SEASONAL FAYRE

## Festive medical myths

More medical myths hit the dust, thanks to **Rachel C Vreeman** and **Aaron E Carroll**

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In the pursuit of scientific truth, even widely held medical beliefs require examination or re-examination. Both physicians and non-physicians sometimes believe things about our bodies that just are not true. As a reminder of the need to apply scientific investigation to conventional wisdom, we previously discussed the evidence disputing seven commonly held medical myths.<sup>1</sup> The holiday season presents a further opportunity to probe medical beliefs recounted during this time of the year.

We generated a list of common medical or health beliefs related to the holidays and winter season and searched Medline for scientific evidence to support or refute these beliefs. If we couldn't find any evidence in the medical literature, we searched the internet using Google.

### Sugar causes hyperactivity in children

While sugarplums may dance in children's heads, visions of holiday sweets terrorise parents with anticipation of hyperactive behaviour. Regardless of what parents might believe, however, sugar is not to blame for out of control little ones. At least 12 double blind randomised controlled trials have examined how children react to diets containing different levels of sugar.<sup>2</sup> None of these studies, not even studies looking specifically at children with attention-deficit/hyperactivity disorder, could detect any differences in behaviour between the children who had sugar and those who did not.<sup>3</sup> This includes sugar from sweets, chocolate, and natural sources. Even in studies of those who were considered "sensitive" to sugar, children did not behave differently after eating sugar full or sugar-free diets.<sup>3</sup>

Scientists have even studied how parents react to the sugar myth. When parents think their children have been given a drink containing sugar (even if it is really sugar-free), they rate their children's behaviour as more hyperactive.<sup>4</sup> The differences in the children's behaviour were all in the parents' minds.<sup>4</sup>

### Suicides increase over the holidays

Holidays can bring out the worst in us. The combined stresses of family dysfunction, exacerbations in loneliness, and more depression over the cold dark winter months are commonly thought to increase the number of suicides. While the holidays might, indeed, be a difficult time for some, there is no good scientific evidence to suggest a holiday peak in suicides.<sup>5-7</sup>

One study from Japan that looked at suicides in 1979-94 showed that the rate of suicide was lowest in the days before a holiday and highest in the days after the holiday.<sup>8</sup> In contrast, in a study from the United States of suicides over a 35 year period, there was no increase before, during, or after holidays.<sup>9</sup> Indeed, people might actually experience increased emotional and social support during holidays. In the US, rates of psychiatric visits decrease before Christmas and increase again afterwards.<sup>10</sup> A smaller study of adolescents showed a peak in suicide attempts at the end of the school year,<sup>11</sup> possibly reflecting a decrease in social support. Data from Ireland on suicide in 1990-8 also failed to connect suicides with the holidays.<sup>12</sup> While Irish women were no more likely to commit suicide on holidays than on any other days, Irish men were actually significantly less likely to do so.

Further debunking myths about suicide, people are not more likely to commit suicide during the dark winter months. Around the world, suicides peak in warmer months and are actually lowest in the winter. In Finland, suicides peak in autumn and are lowest in the winter.<sup>13</sup> In a 30 year study of suicides in Hungary, researchers again found the highest rates of suicides in the summer and the lowest in the winter.<sup>14</sup> Studies of suicide rates from India also show peaks in April and May.<sup>15</sup> Studies from the US reflect this pattern, with lower rates in November and December than in typically warmer months.<sup>6</sup>

Of course, none of this evidence suggests that suicides do not happen over the holidays. The epidemiological evidence just does not support that the holidays are a time of increased risk.

## Poinsettia toxicity

With flowers and leaves of red, green, and white, poinsettias are widely used in holiday decorations. Even though public health officials have reported that poinsettias are safe, many continue to believe this is a poisonous plant.<sup>16</sup>

In an analysis of 849 575 plant exposures reported to the American Association of Poison Control Centers,<sup>17</sup> none of the 22 793 cases involving poinsettia resulted in considerable poisoning.<sup>17</sup> No one died from exposure to or ingestion of poinsettia, and most (96%) did not even require medical treatment. In 92 of the cases, children ingested substantial quantities of poinsettias, but none needed medical treatment, and toxicologists concluded that poinsettia exposures and ingestions can be treated without referral to a healthcare facility.<sup>17</sup> Another study, looking at poinsettia ingestion by rats, could not find a toxic amount of poinsettia, even at amounts that would be the equivalent of 500-600 poinsettia leaves or nearly a kilogram of sap.<sup>18</sup>

## Excess heat loss in the hatless

As temperatures drop, hats and caps flourish. Even the US Army Field manual for survival recommends covering your head in cold weather because “40 to 45 percent of body heat” is lost through the head.<sup>19</sup> If this were true, humans would be just as cold if they went without trousers as if they went without a hat. But patently this is just not the case.

This myth probably originated with an old military study in which scientists put subjects in arctic survival suits (but no hats) and measured their heat loss in extremely cold temperatures.<sup>20</sup> Because it was the only part of the subjects’ bodies that was exposed to the cold, they lost the most heat through their heads. Experts say, however, that had this experiment been performed with subjects wearing only swimsuits, they would not have lost more than 10% of their body heat through their heads.<sup>20</sup> A more recent study confirms that there is nothing special about the head and heat loss.<sup>21</sup> Any uncovered part of the body loses heat and will reduce the core body temperature proportionally. So, if it is cold outside, you should protect your body. But whether you want to keep your head covered or not is up to you.

## Nocturnal feasting makes you fat

Holiday feasts and festivities present us with many culinary options. A common suggestion to avoid unwanted weight gain is to avoid eating at night, and at first glance, some scientific studies seem to support this. In a study of 83 obese and 94 non-obese women in Sweden, the obese women reported eating more meals, and their meals were shifted to the afternoon, evening, or night.<sup>22</sup> But just because obesity and eating more meals at night are associated, it does not mean that one causes the other. People gain weight because they take in more calories overall than they burn up. The obese women were not just night eaters, they were also eating more meals, and taking in more calories makes you gain weight regardless of when calories are consumed.

Other studies found no link at all between eating at night and weight gain. Swedish men did not show any evidence of gaining weight with night time meals.<sup>23</sup> In a study of 86 obese and 61 normal weight men, there were no differences in the timing of when they ate.<sup>23</sup> Another study of 15 obese people found that the timing of meals did not change the circadian rhythm pattern of energy expenditure.<sup>24</sup> In a study of over 2500 patients, eating at night was not associated with weight gain, but eating more than three times a day was linked to being overweight or obese.<sup>25</sup>

Studies have connected skipping breakfast with gaining more weight, but this is not because breakfast skippers eat more at night.<sup>26</sup> Breakfast skippers eat more during the rest of the day. Records of calorie intake suggest that those who eat breakfast maintain healthy weights because their calorie intake is more evenly distributed over the day.<sup>26 27</sup> In other words, when you eat three regular meals, you are not as likely to overeat at any one particular meal or time.

## You can cure a hangover

From aspirin and bananas to Vegemite and water, internet searches present seemingly endless options for preventing or treating alcohol hangovers.<sup>28</sup> Even medical experts offer suggestions.<sup>29</sup>

No scientific evidence, however, supports any cure or effective prevention for alcohol hangovers. A systematic review of randomised trials evaluating medical interventions for preventing or treating hangovers found no effective interventions in either traditional or complementary medicine.<sup>28</sup> While a few small studies using unvalidated symptom scores showed minor improvements, the conclusion of the exhaustive review was that propranolol, tropisetron, tolfenamic acid, fructose or glucose, and dietary supplements including borage, artichoke, prickly pear, and Vegemite all failed to effectively “cure hangovers.” While more recent studies in rats show some potential for new products to alter mechanisms associated with hangovers,<sup>30 31</sup> humans also face risks when using certain “hangover cures.”<sup>32</sup> A hangover is caused by excess alcohol consumption. Thus, the most effective way to avoid a hangover is to consume alcohol only in moderation or not at all.

## Conclusions

Examining common medical myths reminds us to be aware of when evidence supports our advice, and when we operate based on unexamined beliefs. This was not a systematic review of either the evidence to refute these medical myths or of doctors’ beliefs. None the less, we applied rigorous search methods to compile data, and evidence of the prevalence of these medical beliefs is readily available. Only by investigation, discussion, and debate can we reveal the existence of such myths and move the field of medicine forward.

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