



Research paper

The availability and depiction of synthetic cathinones (bath salts) on the Internet: Do online suppliers employ features to maximize purchases?



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ABSTRACT

Background: "Bath salts", a derivative of cathinone, a naturally occurring beta-ketone amphetamine analogue found in the leaves of the khat (*Catha edulis*) plant, is a potent class of designer drugs associated with significant medical and psychiatric consequences. They are commonly used among 20–29 year olds, a group with easy access to the Internet and an inclination to purchase online. Therefore, the Internet has the potential to play a significant role in the distribution and associated consequences of these "legal highs".

Methods: Google searches were used to determine bath salts availability on retail websites and how different search terms affected the proportion of retail websites obtained. Retail websites were reviewed by two independent raters who examined content with a focus on characteristics that increase the likelihood of online sales.

Results: Of the 250 websites found, 31 were unique retail websites. Most retail website hits resulted when a product name was used as the search term. The top three countries hosting retail websites were registered in the United States ($n = 14$; 45%), Germany ($n = 7$; 23%), and the United Kingdom ($n = 3$; 10%). These online drug suppliers provided considerable information and purchasing choice about a variety of synthetic cathinones, legitimized their sites by using recognizable images, online chat features, and mainstream payment and shipping methods, and employed characteristics that promote online purchases.

Conclusion: Online designer drug suppliers use sophisticated methods to market unregulated products to consumers. The international community has taken diverse approaches to address designer drugs: legislative bans, harm reduction approaches, an interim regulated legal market. Multifaceted efforts that target bath salt users, suppliers, and emergency/poison control entities are critical to comprehensively address bath salt ingestion and its consequences.

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Introduction

Synthetic or designer drugs are chemically derived, laboratory produced substances that are designed to mimic the intoxicating effects of other commonly abused illegal drugs. These drugs have penetrated the international community reaching over 70 countries and territories (United Nations Office on Drugs and Crime (UNODC), 2013). One such drug is a derivative of cathinone (with a street name "bath salts"), a naturally occurring beta-ketone

amphetamine analogue found in the leaves of the khat (*Catha edulis*) plant (Prosser & Nelson, 2012). Marketed under a variety of individual brand names (e.g., Ivory Wave, Cloud 9, Vanilla Sky), this category of cathinone-based designer drugs (i.e., will be referred to as bath salts throughout the remainder of the paper) is promoted as a legal high that can provide users with the hallucinogenic and euphoric effects found in methamphetamine and ecstasy (Olives, Orozco, & Stellpflug, 2012; Slomski, 2012). Bath salts can be snorted, injected, and swallowed with intoxication resulting in serious acute and chronic medical and psychiatric conditions including recurrent acute kidney injury (Adebamiro & Perazella, 2012), intense psychosis/delirium (Kasick, McKnight, & Klisovic, 2012; McClean, Anspikian, & Tsuang, 2012; Stoica & Felthous,

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2013), and overdose and death (Karila & Reynaud, 2011; Murray, Murphy, & Beuhler, 2012; Wood & Dargan, 2012). Additional side effects that are frequently reported by US poison centers include paranoia and violent behavior, hallucinations, delusions, suicidal thoughts, seizures, panic attacks, increased blood pressure and heart rate, chest pain, nausea, and vomiting. Considering how often the components of synthetic drugs tend to change, users typically have no idea what they are actually ingesting, making the risk associated with use even higher (Davies et al., 2010). For example, while bath salts typically include 3, 4-methylenedioxypyrovalerone (MDPV) and 4-methylmethcathinone (mephedrone), they can also include butylone, dimethylcathinone, ethcathinone, ethylone, 3- and 4-fluoromethcathinone, methedrone, and provalerone (Prosser & Nelson, 2012).

Bath salt availability in retail establishments such as adult stores, convenience stores, gas stations, head shops, and skateboard shops is complemented by international Internet availability (U.S. Department of Justice National Drug Intelligence Center, 2011; Wilkins, 2014a). Over the past ten years, the Internet has emerged as a market for purchasing prescription and non-designer illegal drugs (Curtis et al., 2014; Forman, 2003; Orizio, Merla, Schulz, & Gelatti, 2011) and there is now evidence that the Internet plays a major role in the distribution of designer drugs (Bruno, Poesiat, & Matthews, 2013; Corazza et al., 2012; European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 2012; INCB, 2013). While there is currently limited but importantly growing research on the type of websites used to sell designer drugs (see Bruno et al., 2013; Corazza et al., 2012, 2014 for seminal work on this topic), research related to online purchases in general suggest that characteristics of websites can actually legitimize a website's presence and promote sales. For example, it has been reported that the likelihood of online purchases increases when websites: (1) are readily accessible and easy to use; (2) are informative about their products; (3) promote trustworthiness and legitimacy through testimonials and other postings that appear legitimate (e.g., logos); (4) imply positive experiences leading to decreased perception for harm; and (5) promise security (CASA (National Center on Addiction and Substance Abuse), 2006; Keen, Ballance, Chan, & Schrump, 1999; Tan & Thoen, 2001, 2002; Van der Heijden, Verhagen, & Creemers, 2003; Venkatesh & Davis, 2000). Knowing that emerging adults have easy access to the Internet (Fox, 2014; Haste, 2005), an inclination to purchase online (Jansen, 2010), and an interest in avoiding positive drug tests through ingestion of ever-changing synthetic compounds (Perrone, Helgesen, & Fischer, 2013), the Internet has the potential to play a significant role in the distribution of these "legal highs" and in their associated medical and psychiatric consequences. Consequently, we examined: (1) the availability of bath salts on the Internet through retail websites; (2) how different search terms affected the proportion of retail websites obtained; and (3) the content of online retail sites with a specific focus on those characteristics that are reported to increase the likelihood of online sales. We discuss approaches undertaken by various countries to address this and suggest approaches that could augment this work.

Methods

Google is the most used search engine accounting for over 80% of web searches (Purcell, Brenner, & Rainie, 2012). In September 2013, Google was used in searches to determine: (1) the number of websites selling bath salts and (2) the content and marketing strategies employed by the websites. Five search terms were used: the generic search term "bath salts" followed by the brand name searches of Ivory Wave, Cloud 9, Vanilla Sky, and Lunar Wave. The first fifty sites per search were reviewed given: (1) close to 80% of

users do not go beyond the first 20 links in searches (Jansen, Spink, & Pedersen, 2005; Jansen, Spink, & Saracevic, 2000) and (2) a preliminary scan showed that anything past the first fifty search results predominantly contained advertisements or spam which did not meet the goals of the project. These criteria (i.e., first fifty results for each of five search terms) resulted in a total of 250 website links for review.

To identify website type, websites were categorized as retail, portal, information, or other. "Retail" websites offered to directly sell bath salts to consumers and "portal" websites linked to retail sites. "Information" websites provided communication venues for sharing information: forums (e.g., comment-based discussions), news articles, blog posts (e.g., individual posts on topics), and social media links (e.g., Facebook page for Bath Salt shops). The "other" category included websites that fell outside of the three primary categories (e.g., information on the movie Vanilla Sky, sites selling actual, non-drug bath salts to be used for bathing, links to sites that were no longer active).

All unique retail websites were reviewed to determine the site's functionality and ease of use (e.g., ability to search by product name or price range, whether it could be accessed on mobile devices), basic product-related information (e.g., legality and state residency, product ingredients, cost, outcome of using the product), and "marketing" techniques (e.g., specials such as buy one get one free, free shipping, anonymity packaging guarantees). A domain registry website (i.e., register.com) was utilized to determine the registration country for each retail website. Finally, to ensure that tabs and other website features were functional, we went through all the stages of completing an order, but cancelled the order at the final stage.

Two independent raters reviewed each of the 250 websites and independently coded category and content data for reliability and validity purposes. Inter-rater reliability as measured by percent exact agreement for type of website was 100%. Inter-rater reliability as measured by percent exact agreement for website content across all websites initially ranged from 69% exact agreement (e.g., whether there was information suggesting the sites were secure) to 100% exact agreement (e.g., whether the site offered free samples, buy one get one free specials). When there were discrepancies in coded responses, coders discussed the item and came to a resolution in all cases. (Note: If there would have been discrepancies that could not have been resolved between the independent coders, the senior author would have made the final coding decision.) This procedure resulted in a final data set with 100% agreement.

Results

Of the 250 websites reviewed, 59 were retail websites, 9 portal websites, 118 information websites, and 63 were other types of websites. As illustrated in Table 1, most retail website hits resulted when a specific product name (e.g., Ivory Wave versus bath salts) was used as the search term. Of the 59 retail websites, nearly half

Table 1
Type of website by search term used.

Search term	Type of website			
	Retail	Portal	Information	Other
Bath salts	9	2	19	21
Ivory Wave	18	3	19	10
Cloud 9	1	2	38	8
Vanilla Sky	13	0	22	14
Lunar Wave	18	2	20	11
Total	59	9	118	64

($n = 28$ or 47%) were available under multiple search terms. This resulted in 31 unique anchor retail websites. Using the domain registry website register.com, the top three countries hosting retail websites were registered in the United States ($n = 14$ or 45%), Germany ($n = 7$ or 23%), and the United Kingdom ($n = 3$ or 10%). Cyprus ($n = 2$), Panama ($n = 1$), Australia ($n = 1$), Czech Republic ($n = 1$), India ($n = 1$) and an undetermined country ($n = 1$) rounded out the list.

Functionality

All websites (100%) were able to be accessed on smart phones. Eighty-one percent of the websites provided a search function allowing the user to search by product type (71%), price (40%), and/or specials (39%). The vast majority of websites (84%) listed products on the side and header of the page so that customers could see what products were available for purchase regardless of the page that they were on.

Ease of purchase

Websites overwhelmingly encouraged an online transaction (94%) although over a quarter (26%) accepted phone orders and 7% accepted orders by text messages. Sixty-eight percent of the sites accepted money-orders or wire transfers and 61% accepted major credit cards. Only 9% allowed payment upon delivery (COD). Seventy-three percent of the websites offered wholesale products with over a third (37%) allowing customers to buy the chemical on its own. Typical retail prices ranged from \$10 to \$35 per bath salts pack (from 200 to 1000 mg packs), but went as high as \$500 for wholesale purchases. Twenty-two sites (71%) offered price match guarantees. Technical support was provided through email (94%), phone (53%), and/or live chat (39%). Live chat was functional in all cases. One site offered technical support 24 h a day, seven days a week.

Speed, security, and privacy

Almost three-quarters of websites (69%) offered expedited shipping with 6% providing free shipping. Websites (56%) utilized terms and symbols synonymous with "secure sites" (e.g., VeriSign Secured) and provided technical information ("our website is secure using 128-bit SSL encryption") that could provide shoppers with a sense of security in online purchasing. These website security statements were accompanied by clever variations of commonly seen security-related visuals on legitimate websites [e.g., a yellow circled check mark (synonymous with Norton Secure) next to Hacker Stop (instead of Stop the Hackers)]. All sites had an icon that linked to a Privacy Policy that discussed cookies, use of e-mail addresses, and storage of identifiable information on servers. Forty-five percent promised anonymity from the police and customs through discreet packaging and non-descript transactions on credit card statements.

Legality

Although few sites allowed a customer to search products legally by state of residence (16%), the majority of websites (87%) contained a disclaimer that urged the consumer to determine legality of the product based on their state of residency. This would be almost impossible for only 7% disclosed the specific chemical compounds contained within their products. There were 5 sites (16%) where customers were unable to add a product to their shopping cart if the compound was illegal in the customer's state. In each of these cases, the sites "suggested" products that could be "legally" purchased.

Features to bolster authenticity

To determine whether websites included features theorized to bolster trust in online purchases; websites were examined to assess the degree to which they included legitimizing images, third party associations, and testimonials. Only a quarter of the retail sites utilized generic legitimizing images (e.g., pictures of a doctor writing a prescription), whereas roughly three out of four websites used recognizable seals of approval (e.g., Better Business Bureau logo). Some of these images included very subtle variations to the true logo, possibly to avoid trademark infringement. Recognizable shipping options (45% stated that they were in partnership with the world's leading shipping companies such as FedEx, UPS, USPS) and the ability to complete a purchase using a major credit card (62% utilized at least one of the four major credit cards – VISA, MasterCard, Discover, American Express) added validity to these online sites. In terms of other purported third party associations, 7% stated that they were an Amazon Associate (we were unable to verify). One site stated that their products were "tested and approved by DEA and legal in all US states" also suggesting that they predominantly marketed to US consumers. Approximately 20% of the retail websites utilized Facebook (21%) and/or Twitter (18%). Testimonials were somewhat common in that 5 sites included product reviews by consumers that could be viewed on each product page, an additional 5 sites included an overall webpage solely devoted to testimonials, and 6 sites appeared to have product reviews but the images to "read reviews" were inactive. Overall, 52% attempted to authenticate their sites through the use of various types of testimonials.

Product information

Sites described use of the product by depicting a "bathing experience" that included calm and relaxing images (13%), sexy images and wording (e.g., concentrated sextacy – 20%), or energizing illustrations (67%). Ten sites (32%) said that they had "perfected the process" to ensure a bathing experience like no other. For all but 2 sites (94%), product names mimicked typical street names of drugs of abuse (e.g., benzo extreme, xtacy, fine china, eight balzz) thus making their effects easy to identify. While none of the websites directly listed any potential side effects or directions for use, there were statements embedded within bath salt descriptions that suggested customers should either become slowly acquainted with the product (48% of the sites) or just a small amount is needed (13% of the sites, e.g., "Our bath salts designed to take your bathing experience to the next level of euphoria and energy. Just a small amount is necessary for profound effects."). All sites did state that the products were for external use only.

Marketing strategies

Approximately 7 out of 10 websites (74%) boasted that they were the best or top seller of their products and 50% promised the ongoing creation of "new blends". Newly-added products and top-sellers were prominently displayed on all sites and were accompanied with the five-star rating icons seen on most retail sites. Free samples (39%), variety sampler packs (23%), buy-one-get-one free (16%), price match guarantees (33%), and discounted products to select states (51%) were just a few of the ways that sites promoted their products. Five percent discounts to repeat buyers were offered by 39% of the sites and free samples were provided with each newsletter sign-up (36%). Forty-three percent utilized brightly colored ads and signs. Twenty-one percent attempted to empathize with the consumer to promote use of their product (e.g., "stress filled day deserves an energizing immersion in an ultimate

bath salts experience"). None of the retail websites promised that a consumer could pass a drug test with their product.

Discussion

The results of this work builds upon the seminal work of Corazza et al. (Corazza et al., 2012, 2014) in describing the range of information and marketing strategies employed by online designer drug suppliers. Google, the most widely used search engine (Purcell et al., 2012), provides a key portal to these well-designed websites. The websites contain considerable purchasing choice about a variety of synthetic cathinones and utilize features associated with an increased likelihood of purchase from an online market (CASA (National Center on Addiction and Substance Abuse), 2006; Keen et al., 1999; Tan & Thoen, 2001, 2002; Van der Heijden et al., 2003; Venkatesh & Davis, 2000). For example, online suppliers of bath salts legitimized their sites by using recognizable images, mainstream payment and shipping methods, and product specials. Websites were also informative about their products (e.g., testimonials, "top/best" selling list, recommendations, product descriptions), promoted trustworthiness through secure payment methods and money back guarantees, and made purchasing easy (e.g., accepted major credit cards, money orders and wire transfers, orders could be placed by text, phone and/or online). The overt and subtle promotion of legality and legitimization (depending upon the website) is particularly concerning because legality, and to some extent legitimization, are frequently equated with safety among users (Corazza et al., 2011). Contradictory information was common however, in that marketing statements cautioned that products were "not for human consumption" to potentially outsmart legal regulation or limit liability if someone is harmed. Security (e.g., cookies not enabled, site 100% secure through encrypted technology) and anonymity [i.e., elusive and discreet packaging describing contents as plant food, insecticides, novelty items, chicken feed additives, or research chemicals (Corazza et al., 2011; Rosenbaum, Carreiro, & Babu, 2012), non-descript name on credit card] were well addressed through statements that were prominently displayed on the home page and pop-ups of website secure ordering during the check-out process.

International governments have taken varied approaches to dealing with this problem. For example, while there are a variety of drug prevention and intervention programs in the US aimed at reducing use across all drug classes, the US Federal and State governments have also attempted to ban their way out of bath salts. In 2009 and 2010, US legislation banned specific chemical versions of bath salts and other synthetic drugs. This did not appear to reduce the use of bath salt conceivably due to: (1) the ability of synthetic drug manufacturers to change formulas to stay ahead of the law and (2) the strategy of web suppliers to provide the US consumer with ways to skirt around the law by recommending products that contained synthetic cathinones that were not banned in their US geographical location (i.e., US state). Current US legislation now targets entire classes of substances (National Conference of State Legislatures, 2012) and it is not yet known whether such bans will have an impact in the US.

The Recreational Drugs European Network project (ReDNet project) funded through the European Union took a much different approach (see Corazza et al., 2013 for a detailed discussion). ReDNet, a European wide prevention project, identified over 650 novel psychoactive substances (NPSs) sold online and developed NPS-specific informational messages (e.g., effects, risks). Notably, ReDNet used numerous technological tools including but not limited to social media (e.g., Facebook), multimedia (e.g., YouTube), Short Message Service (SMS) alerts, and smartphone applications to disseminate this information. This work highlights the importance of web monitoring, illustrates how

technology can be used as a prevention and harm reduction vehicle in combatting the use of designer drugs, and emphasizes the importance of international partnerships across disciplines when dealing with this challenge.

New Zealand took a different and bold approach by establishing the first regulated legal market for NPSs (see Wilkins, 2014a for a detailed description). Under the regulatory authority of New Zealand's Psychoactive Substances Regulatory Board (PSRA) and the Psychoactive Substances Act (PSA), all NPSs (along with those who manufacture, distribute and sell them) were required to be licensed. To receive a license, the PSA stipulated that the NPS would need to meet safety standards, be labeled with health warnings, ingredients, and contact information for the manufacturer and the New Zealand's National Poison Center help-line, and be sold only to individuals 18 years of age and older. There were also strict provisions for where licensed NPSs could and could not be sold (Parliamentary Counsel Office New Zealand, 2013 as cited in Wilkins, 2014a). The New Zealand Ministry of Health began initial implementation of the PSA through an interim regulatory regime. The availability of NPSs in New Zealand decreased substantially: 46 retail outlets down from over 3000; 46 licensed products down from over 200 unlicensed products. In May, 2014, interim implementation of the PSA was abruptly halted as a result of reported adverse events, drug use severity and destructive behavior. Wilkins (2014b) reports that interim licensing deviated from the PSA safety requirements in that pre-market product testing (a central and critical component within the PSA) was not conducted potentially allowing harmful products an interim license. This was compounded by informational gaps on the dependence potential of the individual NPSs and the demographics and extent of use among users, and media reports of extreme adverse events that were countered. It was said that media-reported adverse events were due to other products (not the licensed NPS) and that poor product manufacturing caused problems not the NPS itself. In other words, it appears that New Zealand's PSA was poorly implemented disallowing for a true picture of impact. Despite these problems, Wilkins (2014b) further reports broad support for such an approach in New Zealand and its Ministry of Health is developing mechanisms to improve decision making and implementation. It is believed that New Zealand will emerge with a fully functional regulated NPS market.

While governments continue to use wide-ranging methods to address these products in multifaceted ways, it is also important that businesses augment governmental efforts. At a basic level, advertising firms could work with public health experts to design impactful harm reduction messages so as to resonate with users/potential users. Additionally, financial institutions could be more attentive in determining who can and cannot use their services. For example, PayPal explicitly states they will not process payments for tobacco products, prescription drugs and devices, narcotics, steroids, drug paraphernalia, or controlled substances (PayPal, 2011).

This work is not without limitations. Similar to other studies that examine Internet sales of illegal and designer drugs, Internet supplier sites are transitory. Hence, the sites reviewed for this study may have already shut down and re-opened under a different name. Nonetheless, this review and those of others illustrate marketing and distribution sophistication among online designer drug suppliers. Multifaceted, integrated efforts that target bath salt users/potential users (through sophisticated education and prevention materials accessible through technology), suppliers (through legal action and interdiction efforts) and poison control centers and emergency departments (through adverse event collection and reporting) are critical if we are to address bath salt ingestion and its associated medical, legal, psychosocial, and psychiatric consequences. Different approaches have been put in

place and international dissemination of their impact is critical. This would provide the international community with knowledge needed to build upon programs found to be effective.

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