Bathe with This Stuff (Bath Salts) … It Could Kill You

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Abstract

These are not the bath salts designed for relaxation in the tub. Bath Salts are synthetic cocaine being used readily on the streets as a cocaine substitute. The addictive nature of this drug can result in serious medical issues and is, in some cases, deadly.

Keywords: cocaine, college students, cathinones, bath salts

Bath Salts are a drug known for its similarities to cocaine and contain substituted cathinones. Substituted cathinones have stimulants that descend from cathinone which is a natural drug found in plants (2013). The leaves in these plants have been known to be a recreational drug people use by chewing on the leaves. Germany was the first to report bath salt usage in 2007, but it was also found in Europe, and Australia (2013). The first recorded cases of bath salts in the United States were not reported until 2010.

Bath Salts derive its street name from the image that resembles bath, and Epsom, salts. Though commonly termed bath salts, the synthetic drug has several different names…Ivory Wave, Magic, Super Coke, Vanilla Sky, and Cloud Nine (Edwards, 2012). Bath salts primarily utilize "methylenedioxypyrovalerone (MDPV) and mephedrone (methylmethacathinone) as its active ingredients. Interesting street names were given so that distributors could continue to sell this product inconspicuously, as well as for users to have these drugs and go unnoticed (Goodnough, 2011).

1. Effects of Bath Salt Consumption

MDPV and mephedrone are psychoactive drugs derived from the 'cathinone' drug class, a major component of the 'khat' (Catha edulis) leaf, found on a small shrub that is used in Africa for its stimulant effects. These compounds are ground into a yellowish or white, fine-grained, odorless, powder. Swallowing and snorting are the most common ways of ingesting the drug into one's body, but it can be consumed by smoking inhalation, or by injection as well (Edwards, 2012). In 2009, bath salts resurfaced in U.S. via underground chemists. Specialists found this drug to be 13 times more potent than cocaine (2013). The effect of this mixture may vary from two to eight hours depending on dosage. Bath salts can be easily accessed from convenience stores or other small stores just as if they were cigarettes (Observer Dispatch, 2012).

Over 45 states have reported cases linked to the usage of bath salts from poison control offices (Dolak, 2012). In 2011, President Barack Obama signed an official law banning any chemicals that can be found in the intoxicating drug (Farran, 2011). This meant no one could distribute, use or even be prescribed anything including those ingredients because it would be considered illegal. Mephedrone is similar in reaction to amphetamines and has been shown to act as norepinephrine in the brain, as well as to potentiate the release of dopamine. This produces a "robust increase in the expression of FOs protein in the reward-relevant brain regions such as the pre-frontal cortex, ventral tegmental area" (Kasick, McKnight, & Klisovic, 2012).

Reports have shown that short-term symptoms resulting from the usage of this drug include:

- Headaches
- Irregular heart reactions
- Queasiness

Doctors have also found patients to present with:

- High blood pressure
- Fast heartbeats
- Involuntary muscle movements
- Mental illnesses (Goodnough, 2011)

With continued usage the individual develops a tolerance to the stimulant. With a history of high dosage, studies show that the brain develops a continuous shortage of serotonin (Kasick, McKnight, & Klisovic, 2012). Heart attacks have been reported due to the heart palpitations, bodily functions such as kidney and liver failure also result from using the drug (Goodnough, 2011). Patients have also reported to experience hallucinations, schizophrenia, and panic attacks that lead to violent behavior (2013). Due to the hallucinations and paranoia, death has occurred from users committing suicide. Also, people have thought to see weird objects such as aliens (Farran, 2011). Many cases have reported that users on the drug enter a state of fear. The fear causes them to react in violent ways to people around them including their selves (Dolak, 2012).

Examples of bath salt use: an incident occurred in Florida when a man refused arrest by officers. As he lay in handcuffs on the squad car, he began to scrape his teeth against the hood to the point that the metal became visible (ABC News, 2012). Another instance was the famous Rudy Eugene case; a nude African American male was shot several times and eventually died after he refused to stop eating the face of another male. His toxicology report interestingly stated, "the tests ruled out the suggestion that 35-year-old Eugene may have been under the influence of bath salts" (CBS News, 2012).

2. Combating the Issue

Unlike numerous other drugs, drug dogs cannot detect this substance (2013). Alternatively, "methylenedioxypyrovalerone behaves similar to a cocaine-like dopamine reuptake inhibitor" (Baumann, Partilla, & Lehner, 2012) with one main difference - potency. When MDPV and cocaine are compared side by side, "MDPV is 50-fold more potent at DAT (dopamine test), 10-fold more potent at NET (norepinephrine test), and 10-less potent at SERT (serotonin test)" (Baumann, Partilla, & Lehner, 2012). In September of 2011, the U.S. drug agency set out to ban all ingredients included in the drug. This would help control the distribution and access of the poisonous drug. They set out to make this illegal for the connection to violent and deadly outbreaks (Farran, 2011).

President Barack Obama signed a federal law in the summer of 2012 banning the sale of bath salts, synthetic marijuana and other synthetic drugs across the U.S. This was done to permanently remove any loopholes companies created (Observer Dispatch, 2012). As with other synthetic drugs, controlling the sales and distribution of bath salts is next to impossible. Able to be bought in convenience stores, tattoo shops, head shops, as well as online, regulating this new drug had become increasingly difficult. However, what makes this law different from others is that it "prohibits not only the compounds currently identified as bath salts, but also outlaws similar compounds that may be produced in the future" (Haggin, 2012).

3. Treatment

Patients diagnosed as an overdose were given admittance into ICU (intensive care unit). Measures taken include restraint and antipsychotics in order to ensure safety of the patient as well as the medical staff (Goodnough, 2011). Due to the existence of Rhabdomyolysis some patients are diagnosed as incurable. This is a condition that harms the skeletal muscle and the damaged tissue is then released into the bloodstream. Damaged tissue in the bloodstream becomes toxic to the kidneys, which causes kidney failure (2013).

To cure this, the patient must undergo dialysis and/or hemofiltration. Hemofiltration is a procedure that sends the patients' blood through filtration tubes and removes waste products. The blood is then reinserted into the patient with new fluids (2013). When patients are currently on Bath Salts the best thing for them is to be detoxed (Edward, 2012). Cleaning the drug out of their system will help with the reduction of hallucinations and lashing out (Edwards, 2012).

4. Study Methods

The purpose of the study is to gather students' knowledge of the new synthetic cocaine, bath salts, through their use. The researcher collected data from questionnaires of students at a university in East Texas.

4.1 Participant Selection

The investigator sent an e-mail out to all graduate assistants teaching fitness recreational activities (FRA) regarding the study. At the beginning of each FRA, the graduate assistant (not the researcher) read the consent paragraph and

students were invited to complete the survey. FRAs are 2 hours of required university studies physical education courses for all students at this university. Since this is a required course for all students of the university, it will include the whole undergraduate population. Those who do not want to participate have an option of completing a given crossword puzzle within the survey packet. Survey participation does not immediately indicate they have tried bath salts.

4.2 Instrumentation

The questionnaire was developed by Dr. Lavelle Hendricks, a substance use counselor. The decision to utilize this method was strengthened with the knowledge that authorities in the field of educational research regard questionnaires as valuable instruments in that they are an impersonal method of obtaining data from a vast number of individuals, scattered throughout a sizeable territory.

The questionnaire is one of the oldest types of instruments for the collection of data for research. It is also one of the most frequently used methods of obtaining information. In the construction of the questionnaires used in this study, questions requiring brief responses are used in attempt to increase objectivity and to provide greater accuracy in tabulating responses. The investigators anticipated that questions requiring brief responses would result in more reliable and valid data.

The questionnaire is included in appendix B. Questions concerning age, gender, and previous health education were included. Additional questions were included for users of bath salts. Since questions that could be easily answered by the participant were of the utmost importance to the investigator, a "fill in the blank" type of question was used for a majority of the questions. Space was provided to specify additional answers when necessary.

4.3 Collection and Treatment of Data

A professional peer reviewer was retained to analyze the data categories to further increase the credibility and conformability of the findings. All phases of this project were subject to scrutiny by an external auditor. Besides her experience with doctoral research, the auditor was chosen due to her low fees and turnaround time.

When questionnaires from student were compiled after one week of dispersal, a spreadsheet was developed for recording the data obtained from the questionnaires. Total frequencies were obtained and percentages were computed for each item on both questionnaires. Ranges were used where numerical answers were requested. Percentages were computed for each range. The tabulations were double checked for each questionnaire for accuracy.

5. Analysis of the Data

264 students at a university in east Texas returned the questionnaires. Data reveal that 135 participants were male and 129 were female. Age distribution was 18-22 years: 189 students; 23-26 years: 53 students; 27 & over: 22 students. In response to "Have you ever had a course/class on drug education," 55% checked yes, 42% marked no and 3% did not answer. Regarding "when they had the course," various answers ranged from middle school to the previous semester. For those that took a course, 7 students reported that it was not required. Responses to "Did it make an impact on your life" indicate that 50% said 'yes' and 50% stated 'no'. If the participant answered 'yes', reasons were given such as, "more knowledge and awareness concerning drugs."

For the question "What is the active ingredient found in cocaine, 224 students answered baking soda, 3 students marked Lysergic acid diethylamide, 31 students replied mephedrone, 4 responded crystals and 2 students circled acid. Two students did not respond. With the question "What is the drug bath salts", 204 out of the 264 responses replied synthetic cocaine. 4 students marked Ecstasy.

In question 9, students were requested to answer if they had ever used bath salts. 256 students stated no, while 8 students answered yes. For reasons why, 4 people responded 'wanted to try', while the other four stated 'peer pressure'. Ages of first use included two students at 18 years, four at 21 years and the other two at 20 years. Two students purchased bath salts via the tobacco store; one at the convenience store, and three students answered 'other'. Two checked the 'online' option. In regards to bath salts costs, only three students paid money (did not indicate how much), while the others did not pay. Two students admitted trying bath salts several times, while the other six stated they only tried it once.

Responses concerning "Do you know anyone who has ever used bath salts" indicated that 54% said no, while 42% stated yes and 4% did not respond. Signs and symptoms shown were broken down in the following table:

Table 1. Friends who used bath salts signs and symptoms

signs/symptoms	number responded	Percentage
Attention increased	2	6%
Calm	1	3%
Chill	2	6%
Crazy	1	3%
Empathy	2	6%
Hallucinations	2	6%
Happy	1	3%
High	5	16%
Hostility decreased	2	6%
Immobile	1	3%
Impaired	2	6%
Mood increased	1	3%
None	1	3%
Numb	1	3%
Want More	7	22%
Wellness overall increased	1	3%
Total	32	100%

6. Recommendations for Future Studies

The following questions are proposed as further investigation that could be of value for the enhancement of drug education programs in the Texas community:

1. How effective is a drug abuse program for students?
2. Would data on bath salts in colleges in other states be similar to Texas?
3. A replication of this study on a national or regional basis.
4. Would a replication of this study in 2023 reveal significant changes?
5. What will be the effect of making bath salts illegal in Texas?

7. Conclusion

Although bath salts are a relatively new drug, it should not be overlooked. This highly dangerous substance can have a detrimental effect on anyone who should choose to ingest it. This grossly toxic chemical damages not only the mind but the body of users. It has the potential to leave users in such a state as to endanger themselves as well as those around them. Multiple deaths have already been linked to this substance, and more are sure to follow. While little can be done about that which has already occurred, the focus of our efforts need to be on treatment and prevention. Research has shown that treatment is possible within the medical field, although this treatment can be costly and time consuming. Means of prevention have also been presented from a legal stand point, and legislation has been enacted to help prevent the spread of bath salts but government and law enforcement can only do so much. Our study conducted on 264 university students helps to show that bath salts are present in the collegiate environment. Of those sampled 42% responded as to having known someone who utilizes this substance. This is a

remarkably high number. It is our job to educators to continue the fight and further our knowledge of the issue. In doing so we will be better prepared to combat a growing threat before it has the opportunity to become an epidemic.

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